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MiG-17 Fresco

Hans-Heiri Stapfer

Walk Around No. 46

Squadron Signal Publications

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Despite its similarity to its predecessor, the MiG-15 "Fagot," the MiG-17 was a new aircraft. Its wing had greater sweepback (49 degrees inboard and 45.3 degrees outboard vs. the MiG-15's 36 degrees), was thinner (a thickness/chord ratio of 10 percent versus the MiG-15's 12 percent), and had rounder wing tips. In order to avoid loss of airflow over the wings at low speeds, the MiG-17's wing was equipped with three wing fences instead of the MiG-15's two. The new fighter's fuselage was 1.126 meters (3 ft 8 in) longer, and its tail surfaces were larger and more sharply swept than those of its predecessor. The MiG-17 (NATO reporting name "Fresco-A") was powered by the same VK-1 power plant as the MiG-15bis Fagot-B.

The first prototype (SI-2) was completed in July 1949 and flew for the first time on 14 January 1950. Production MiG-17 Fresco-As began leaving the factory in late 1951. The MiG-17 was unveiled to the public on 20 June 1953 during an air show at the Tushino military airfield northwest of Moscow, and Western military observers present believed they had seen a new variant of the MiG-15.

The most widely produced variant of the MiG-17 was the MiG-17F (Fresco-C,) which had a VK-1F afterburning turbojet (maximum thrust of 7,451 pounds) and a new aft fuselage with larger airbrakes. The MiG-17PF Fresco-D was an all-weather version of the MiG-17F airframe, equipped with an RP-1 *Izumrud*-1 (NATO designation "Scan Can") radar system, and became the first all-weather fighter in the inventory of Moscow's Eastern Europe satellite states.

Poland's Panstwowe Zaklady Lotnicze (State Aircraft Factory — PZL for short) produced the MiG-17F Fresco-C under the designation "Lim-5." Between 1956 and 1960, 477 Lim-5s were built in nineteen production batches. The ground-attack derivative of the Lim-5 was the Lim-6bis, which was equipped with an SH-19 drag chute container and two wing pylons. The last Lim-6bis was phased out of Polish Air Force service in February 1992. In all, 716 versions of the MiG-17 were built in Poland.

The MiG-17F was license-built in China at the Shenyang Aircraft Factory as the "J-5" (NATO reporting name "Farmer-C"). A total of 767 J-5s were manufactured between 1956 and 1959. The J-5 was exported under the designation "F-5."

The majority of MiG-17s were built in the Soviet Union. Five GAZ (*Gosudarstvenny Aviatsionny Zavod*– State Aircraft Factories) produced 7,999 MiG-17s of different models between late 1951 and 1955. Nearly forty countries used the MiG-17 or license-built versions in front-line service. Of the 9,482 MiG-17s built, only about a dozen are still flying today.

Acknowledgements and Photo Credits

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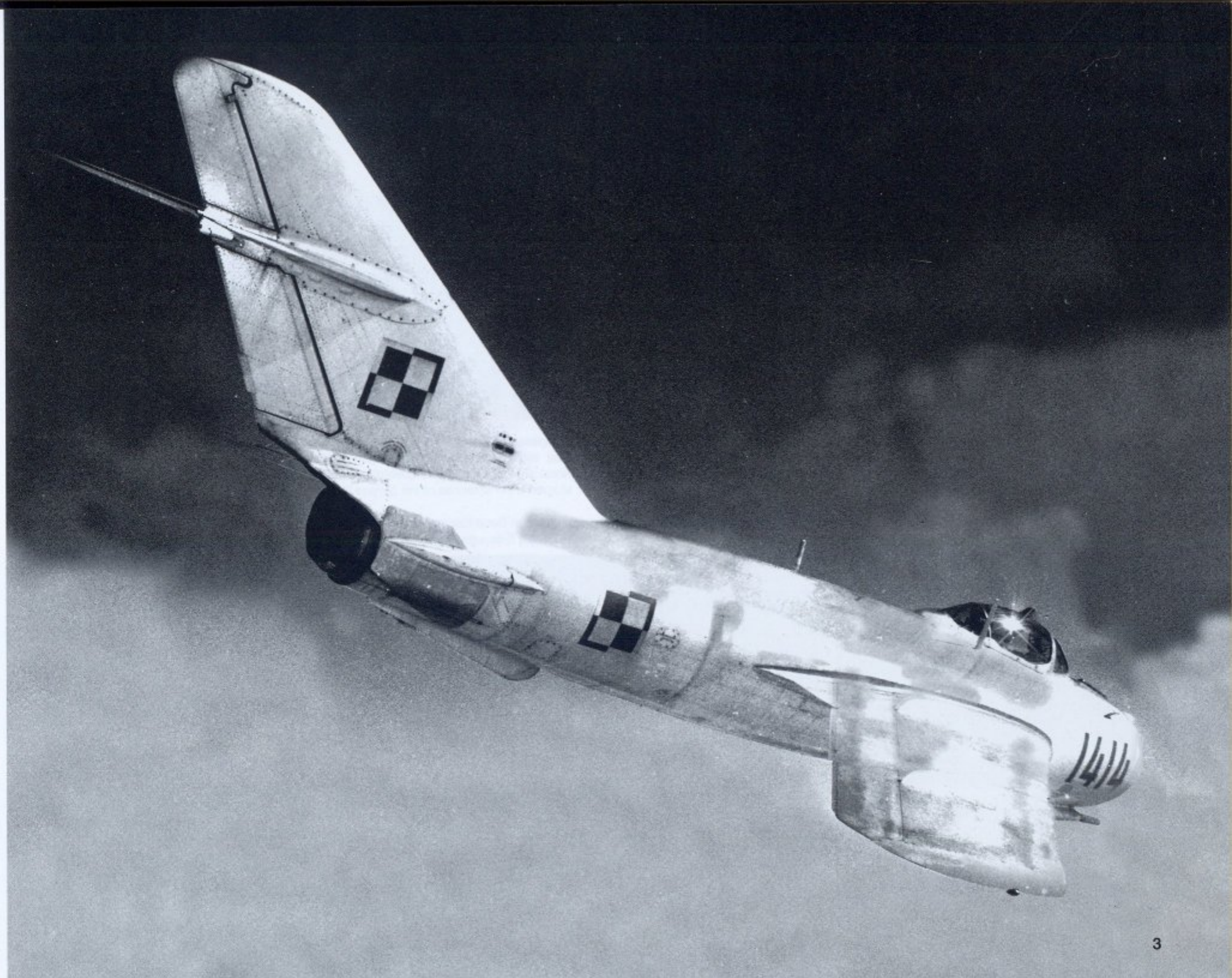
(Front cover) A Chinese-manufactured Shenyang J-5, "Red 2077," of the 923rd Fighter Regiment, North Vietnamese Air Force, taxis for takeoff at Kep, North Vietnam, 1968.

(Title page) This U.S.-registered Shenyang J-5 (s/n 0714; N306DM) belonged to Yak Attack, Inc., Lake Oswego, Oregon. It carried Soviet Air Force markings and a three-digit tactical number, which was very seldom used by the *Voenno-vozdushnye sili* (*VVS* – Soviet Air Forces). The Fresco-C was severly damaged when an aluminum fuel line broke on takeoff at Aurora, Oregon, on 1 March 1994, causing an explosion and fire in the aft fuselage. The pilot managed to safely land the aircraft, which is now in the custody of the Oregon Air and Space Museum and awaiting restoration.

(Facing page) The MiG-17F Fresco was a real pilot's airplane, essentially an improved MiG-15 with a thinner wing designed for high-speed maneuvers. Its relatively small size, lower wing loading, and internal cannon armament made the MiG-17F a serious match for more modern, radar-equipped, missile-armed supersonic fighters. This Fresco is a Polish-built Lim-5 (serial number 1C-14-14), manufactured by Wytwornia Spretzu Komunikacy at Mielec in September 1958.

(Back cover) A Shenyang J-5 of the Chinese People's Liberation Army Air Force intercepts an F-86 of the Republic of China (Taiwan) Air Force over the Formosa Straits in September 1958. PLAAF Frescos routinely tangled with RoCAF Sabres during the dispute over the islands of Quemoy and Matsu throughout the fall of that year, and the MiG-17 pilots claimed two F-86s destroyed.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A formation of *VVS* Fresco-As escorts a very early Aeroflot Il-18. The MiG-17s all carry two-digit blue tactical numbers.

A Nigerian Air Force MiG-17 ("Black NAF 625") during the Biafran Civil War, which lasted between May 1967 and January 1970. Nigeria's Fresco-Cs were formerly operated by the Egyptian Air Force. The aircraft lacks a nose-mounted SRD-1 *Radal* radar rangefinder antenna and the button-shaped ECM antennas of the *Syrena*-2 radar homing and warning system.

A Chinese-manufactured Shenyang F-5 of the Forcat Ushtarake Ajore Shgipetare (Albanian Air Force), based at Berat-Kucova Air Force Base, south of the capital, Tirana. The first digit (4) in the code "4-25" denotes that the Fresco-C belongs to the 1st Squadron of the 1875th Fighter Aviation Regiment. Twelve F-5s were delivered to Albania in 1962.

This early production Lim-5 ("Red 201") of the Polskie Wojsko Lotnicze (Polish Air Force) was delivered on 19 November 1957. Its serial number (s/n 1C-02-01) denotes that it was the first aircraft of the second block built by WSK at Mielec. It lacks the SRD-1 *Radal* radar rangefinder antenna but is equipped with a radio antenna. This particular Fresco-C eventually became the prototype for the Lim-5R tactical reconnaissance version.

An Egyptian Air Force MiG-17F ("Black 2975") during Bright Star 81, a joint American-Egyptian exercise conducted in December 1981. The Fresco-C is equipped with rails capable of holding four 76 mm unguided rockets. This was a local Egyptian modification performed by the Aircraft Modification Depot in Heluan. No SRD-1 *Radal* rangefinder antenna is installed on this MiG-17F.

Two Fortele Aeriene ale Republicii Socialiste Romane (Romanian Air Force) MiG-17PF Fresco-Ds ("Red 413" and "Red 0904") being readied for a mission. "Red 0904" is now on exhibit at the National Military Museum at Bucharest. The tactical number is repeated on the 400-liter drop tank.

The *Bulgarski Voyenno Vozdushni Sili* (Bulgarian Air Force) had a single Fighter Aviation Regiment with MiG-17PFs on strength. The 15. *Iztrebitelen Aviazionen Polk* (15th Fighter Aviation Regiment), known as "The 15," based at Ravnez flew the Fresco-D until 1978. A unique Bulgarian feature was the application of the national marking on the upper part of the vertical fin.

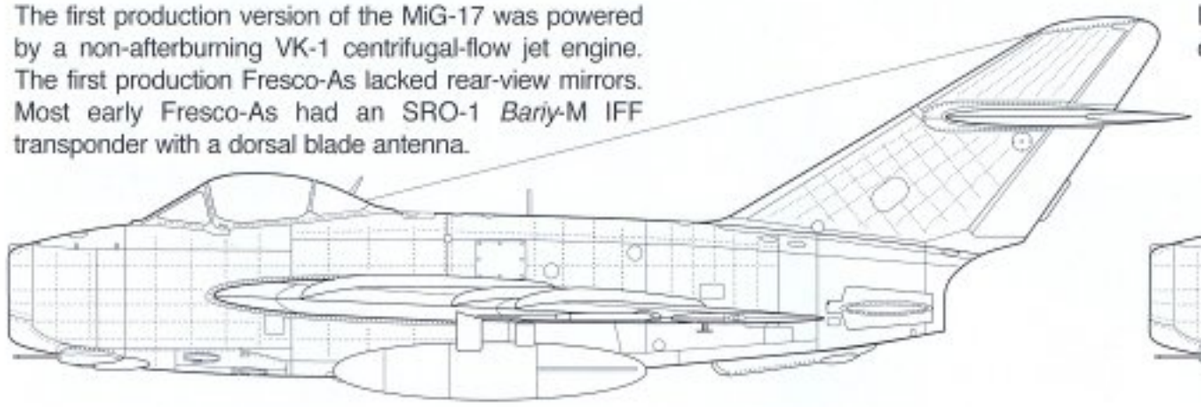
A Polish-built MiG-17F ("Red 630"; s/n 1C-09-30) of Jagdfliegergeschwader 2 (2nd Fighter Aviation Regiment) "Juri Gagarin" of the Luftstreitkräfte der Nationalen Volksarmee (East German Air Force) during a practice flight over the Baltic Sea. This unit was based at Trollenhagen near Neubrandenburg and operated the MiG-17F between 1957 and 1968.

The MiG-17 was the first Soviet fighter with all-weather capabilities. This East German MiG-17PF ("Red 468"; s/n 1D-03-07) was put in service in May 1959 with Jagdfliegergeschwader 1 (1st Fighter Aviation Regiment) "Fritz Schmenkel" at Cottbus. This particular Fresco-D crashed on 27 August 1966.

Design Evolution

MiG-17 Fresco-A (early)

The first production version of the MiG-17 was powered by a non-afterburning VK-1 centrifugal-flow jet engine. The first production Fresco-As lacked rear-view mirrors. Most early Fresco-As had an SRO-1 *Bariy*-M IFF transponder with a dorsal blade antenna.



MiG-17 Fresco-A (late)

Late production Fresco-As were each fitted with a rear-view mirror on the canopy and a *Syrena*-2 radar warning system with button antennas.

MiG-17F Fresco-C (early)

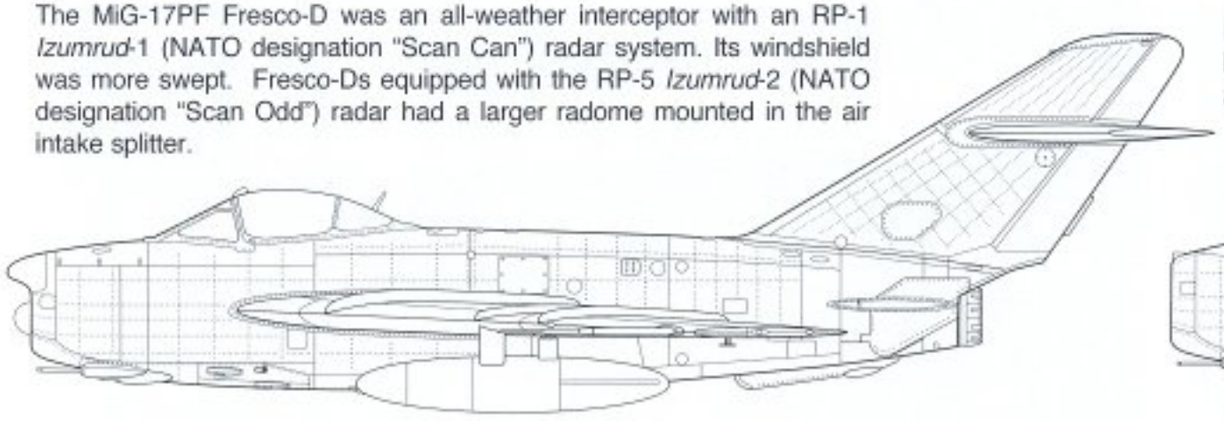
The MiG-17F Fresco-C was equipped with an afterburning VK-1F jet engine and larger airbrakes. Early MiG-17Fs lacked the SRD-1 *Radal* radar rangefinder but had the SRO-1 *Bariy*-M IFF transponder with dorsal blade antenna. Many early MiG-17s were equipped with a wire radio antenna.

MiG-17F Fresco-C (late)

The standard production version of the MiG-17F had an SRD-1 *Radal* radar rangefinder on the nose; late models were equipped with the SRD-1M *Radal*-M rangefinder. Late models of the Fresco-C lacked both the wire radio antenna and the blade antenna for the SRO-1 *Bariy*-M IFF transponder.

MiG-17PF Fresco-D

The MiG-17PF Fresco-D was an all-weather interceptor with an RP-1 *Izumrud*-1 (NATO designation "Scan Can") radar system. Its windshield was more swept. Fresco-Ds equipped with the RP-5 *Izumrud*-2 (NATO designation "Scan Odd") radar had a larger radome mounted in the air intake splitter.



Lim-6bis

The Lim-6bis was a Polish-designed and manufactured version of the Fresco-C, optimized for ground attack. Its most noticeable features were a bullet-shaped fairing, located below the rudder, containing a drag chute, and underwing pods housing sixteen 57 mm unguided rockets.

"Black 1721," an early Soviet-built MiG-17F Fresco-C of the Cambodian Air Force at Tan Son Nhut Airbase, South Vietnam, in February 1972. The cannon platform has been lowered for examination.

This Lim-5 (s/n 1A-10-10) was built in April 1958 and served as "Red 1010" with the 26. Pulk Lotnictwa Mysliwskiego (26th Fighter Aviation Regiment) at Redzikowo Air Force Base. In 1988 the Fresco-C was sold to the U.S. Defense Test Evaluation and Support Agency (DTESA) and operated from Kirtland Air Force Base, Albuquerque, New Mexico, as "Red 010."

A former Polish Air Force Lim-6M (s/n 1D-06-34) purchased by the DTESA. The blade antenna on the port side adjacent to the canopy is a U.S. modification. The DTESA emblem has been applied to the fin, but the former Polish tactical number "Red 634" has been retained. The Fresco-D is now part of the Pima County Air Museum at Tucson, Arizona, but carries false Soviet Air Force markings.

A former Hungarian Air Force MiG-17PF in false *VVS* markings at the storage dump at Vecses near Budapest during summer 1992. This particular Fresco-D previously served with the 50. Honi Vadaszrepülő Ezred (50th Home Defense Interceptor Regiment).

This former Hungarian Air Force MiG-17PF carries no tactical number. The radome for the track radar of the RP-1 "Scan Can" radar has been destroyed. In Hungarian Air Force service, the MiG-17PF received the nickname "Csuszo" (glider).

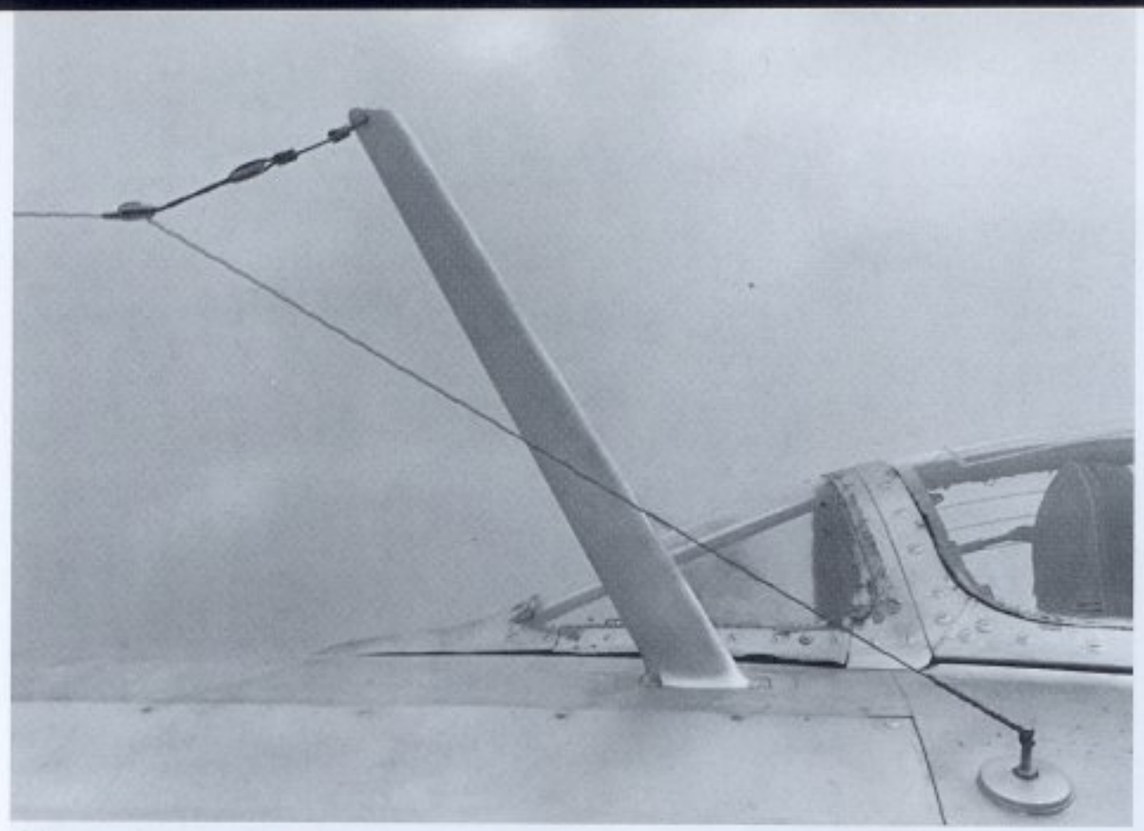
The number "Red 1975" applied to this particular MiG-17PF of the Hungarian Air Force is not a tactical number but simply reflects the year the Fresco-D was struck off charge. Vandals had set the cockpit on fire before the fighter was taken to the Vecses storage depot near the International Airport of Budapest. The S-13 gun camera on the starboard side nose has been removed.

"Red 17," a badly damaged MiG-17PF (s/n 0404), rests with its wings removed at the storage dump at Vecses. The radome for the track radar has been damaged. The dump has been cleared in the meantime. Most of the MiG-15s and -17s on exhibit at Vecses were either scrapped or taken to other sites.

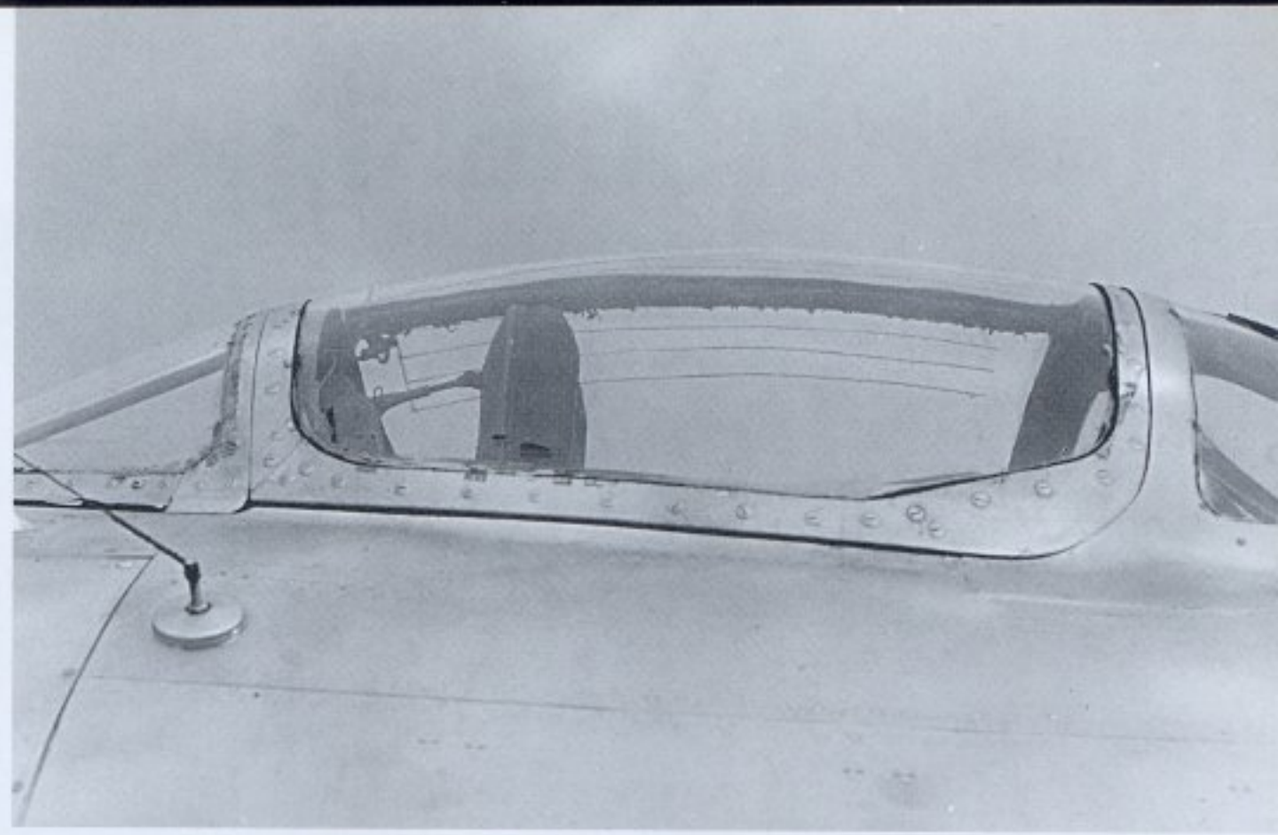
The MiG-17 prototypes and preproduction aircraft had a number of components adopted from the MiG-15. This SI-2 ("Red 671"), the second prototype, has the nose and gun blast panel of a MiG-15. In contrast to preproduction MiG-17s, it has no rudder trim tab. The MiG-15, all MiG-17 prototypes, and preproduction Fresco-As lacked the balance weight that was mounted on the surface of the lower wing tip of production aircraft.

The wing of a preproduction MiG-17. The MiG-15 had only two wing fences, while all MiG-17s had three. All versions of the MiG-17 were equipped with an adjustable trim tab on the port aileron. The MiG-15 had only ground-adjustable trim tabs.

Due to its thinner wing, the preproduction MiG-17 had a much sharper wing root leading edge fairing than did the MiG-15. Production MiG-17 Frescos had a slightly different inboard wing leading edge panel from this particular preproduction MiG-17.



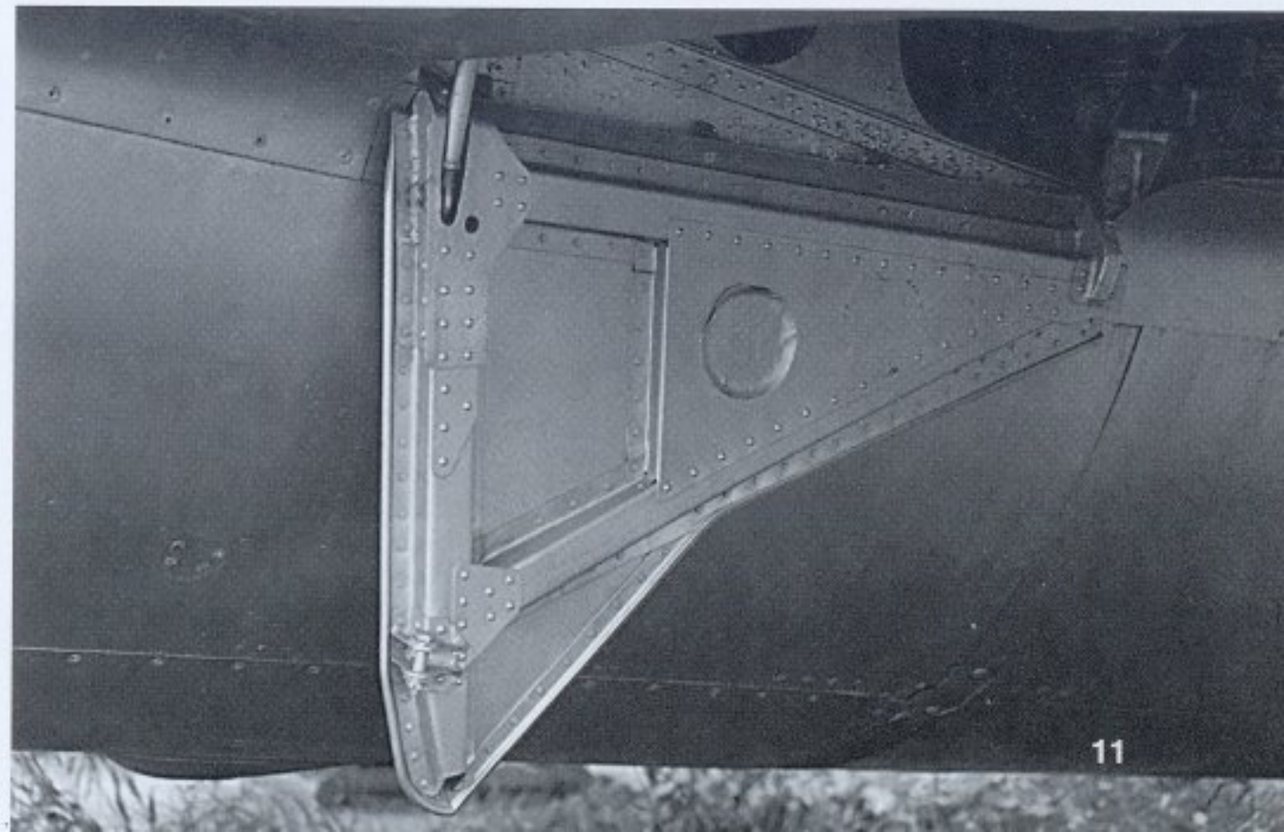
The preproduction MiG-17 had the same radio antenna configuration as that of early MiG-15s. The antenna wire was connected to the large starboard antenna mast for the RSI-6K radio. On late MiG-15s and all MiG-17 Fresco versions, the antenna wire connected directly to a small circular mast on the starboard fuselage.



Preproduction MiG-17s as well as early production MiG-17 Fresco-As had a wide rear canopy frame carried over from the MiG-15 Fagot, but the MiG-15's canopy was rounder than that of the MiG-17. In addition, all MiG-15s lacked the heating wires, embedded in the upper part of the glazing, that became standard on all MiG-17s.

Preproduction MiG-17s adopted the blistered cannon shell ejection port design of the MiG-15. On production MiG-17 Fresco-As, the rectangular slot in the forward blister was slightly offset to inboard, like that in the rear blister.

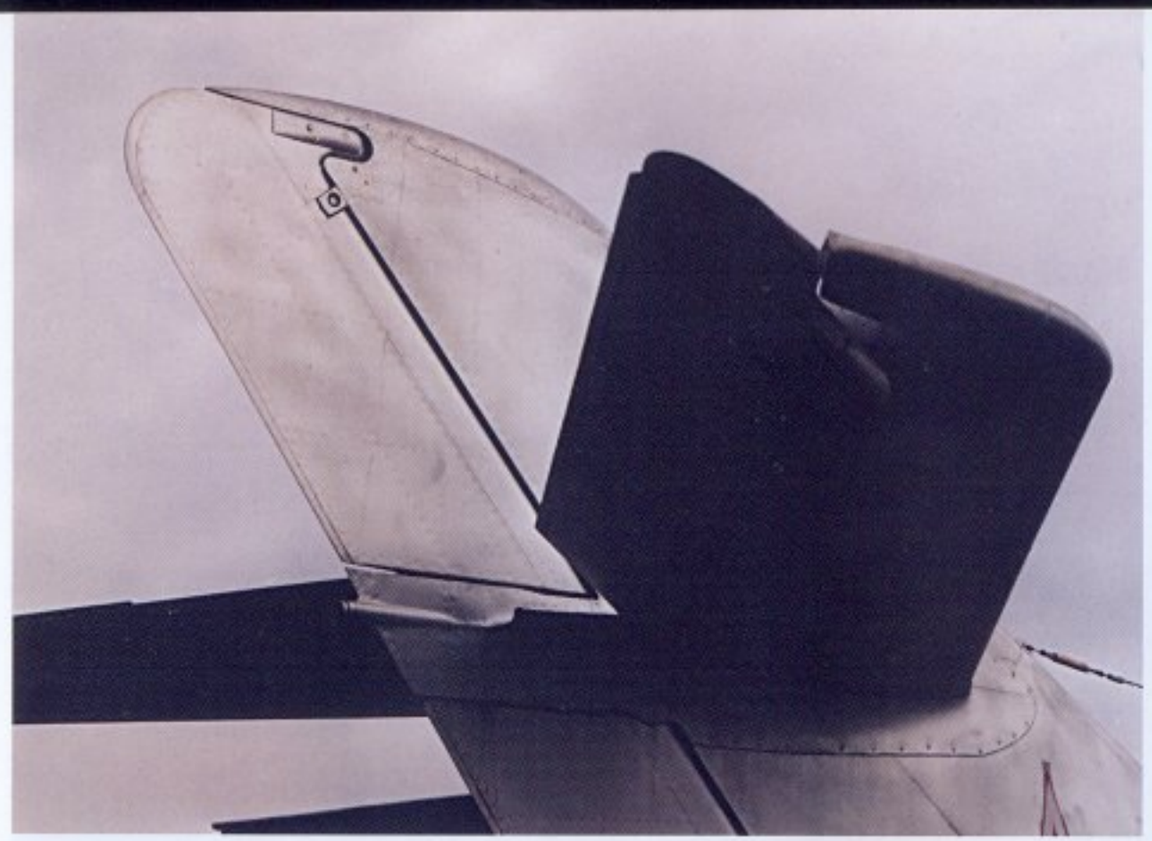
A distinctive difference between the MiG-15 and the MiG-17 was the shape of the main landing gear wheel cover doors. The aft portion of the door was rectangular on all Fagots, but the door of the Fresco was somewhat triangular.



One of the preproduction MiG-17s that were built in early 1951 at State Aircraft Factory 21 at Gorky. This particular example has been on exhibit for many years at the Soviet Air Force Museum at Monino.

The starboard nose of a preproduction MiG-17. Preproduction Frescos, like their MiG-15 predecessors, lacked a nose pitot tube below the radio bay access panel on the starboard side. The large non-standard rectangular panel is probably a repair patch.

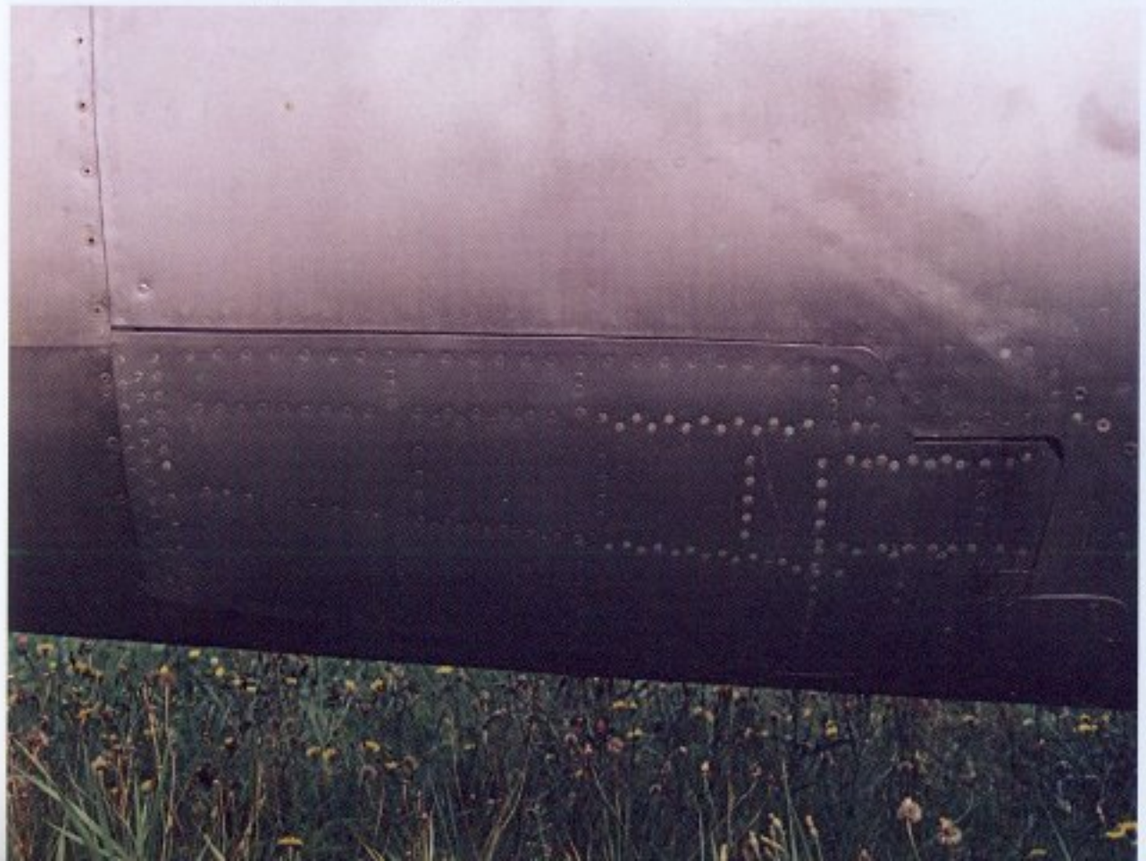
The port side of the nose of a preproduction MiG-17. The gun blast panel of the MiG-17 was adopted from the MiG-15. The MiG-17 Fresco-A was equipped with a larger gun blast panel on the port side. The MiG-17 also had a smaller radio bay acces panel than did the MiG-15.



The tail section of a preproduction MiG-17. The aft position light of the MiG-17 was incorporated into the vertical fin's trailing edge unlike the MiG-15's, which was at the tip of a bullet-shaped fairing. An aftward extension of the fin's tip covered the rudder balance weights. MiG-15s lacked such an extension. This is another recognition feature of the MiG-17.

The handcrafted rear fuselage of a preproduction MiG-17. The panel joins are different from that of the production MiG-17 Fresco-A, and most of the access hatches of the production aircraft are missing. The EKSR-46 flare dispenser is also nonstandard, as are the national markings. During this period the red star usually had a white border with a thin red outer edge.

The air brake of the preproduction MiG-17 lacked the large fairing introduced on the production Fresco-A. The brake was also smaller in size than that of production MiG-17s. The aft corners of the air brakes were squared off on preproduction MiG-17s, but rounded on the Fresco-A.



All versions of the Fresco had an adjustable rudder trim tab, while MiG-15s had only a ground-adjustable rudder trim tab. Preproduction MiG-17s lacked the ventral fin introduced on the production models.

(Above) "Red 01," a very early MiG-17 Fresco-A, is equipped with a MiG-15-type canopy. It also lacks the SRO-1 *Baryl*-M IFF transponder, as indicated by the absence of a dorsal blade antenna on the fuselage spine.

(Below) Late production MiG-17 Fresco-As were equipped with the *Syrena*-2 radar homing and warning system, an antenna for which was mounted just below the position light on the fin. They also had a more narrow rear canopy frame. These late MiG-17s each have rear-view mirrors on their canopies.

A lineup of MiG-17 Fresco-As. The rear-view mirror fairing on the canopy and the pitot tube above the tactical number are standard features of the MiG-17. These Fresco-As all have the early ejection seat adopted from the MiG-15. The canopy glass of all MiG-17 versions was more angular than that of the MiG-15 Fagot.

A late production MiG-17 Fresco-A with an ejection seat from a MiG-17F Fresco-C. This seat featured a much larger headrest. The entire nose panel of the Fresco-A could be removed, but the MiG-17F's nose panel was attached by two hinges. The nose panel of the MiG-17 was not as wide as that of the MiG-15.

The nose of MiG-17 Fresco-A "Red 621" (s/n 1707) of the East German Air Force. The absence of a diamond-shaped air intake in the upper part of the air intake splitter is typical of the Fresco-A and distinguishes it from the MiG-15, which had such an intake. This is a standard production MiG-17 Fresco-A with a short forward gun blast panel. Early MiG-17 Fresco-As had a taller gun blast panel. All MiG-17 variants used the same type of nose wheel as late-production MiG-15s.

The nose of an early production Bulgarian Air Force MiG-17 Fresco-A on exhibit at the Air and Space Museum at Krumovo Air Force Base near Plovdiv in western Bulgaria. Most Fresco-As lacked a rear-view mirror.

The starboard nose of a MiG-17 Fresco-A with the large fairing for the N-37 cannon. The N-37 cannon of this Fresco-A was removed and the opening for the barrel faired over when the aircraft was converted for reconnaissance duties in the Bulgarian Air Force.

The rear portion of the starboard fairing for the N-37 37 mm cannon on a Fresco-A. The two access panels above the fairing are standard for the Fresco-A. The MiG-15 had a single, small access hatch in the same location.

The starboard shell ejection port for the N-37 cannon of a MiG-17 Fresco-A. The circular access panel was standard on the Fresco-A. Late production Fagot As also had a circular access hatch above the shell ejection port.

The port nose of Bulgarian Air Force MiG-17 "Red 71" (Bulgarian inventory number 61-7207). This was the first Bulgarian Fresco-A to receive the winged eagle emblem, which was issued to brave pilots with outstanding performance. This Fresco-A was flown by Lubomir Jordanov Blagojev during his assignment as commander of the 27. Izrebitelen Aviazionen Polk (27th Fighter Aviation Regiment) at Baltchik on the Black Sea.

This access panel was located on the nose, just below the wings of all MiG-17s. However it is not a distinguishing feature of the MiG-17, as the MiG-15 had a similar panel in the same location. The panel was located on both sides of the fuselage of both MiG-17 Fresco-A and MiG-15 Fagot.

The armament of the MiG-17 Fresco-A was identical to that of the MiG-15bis. One distinctive feature of the MiG-17 was its larger gun blast panel on the port side. It extended higher up the nose than that of the MiG-15 and extended rearward almost to the aft end of the upper NR-23 cannon fairing. The MiG-15's blast panel extended aft only as far as the upper NR-23 cannon fairing. Standard production Fresco-As had a slightly shorter blast panel than this particular Bulgarian Air Force MiG-17.

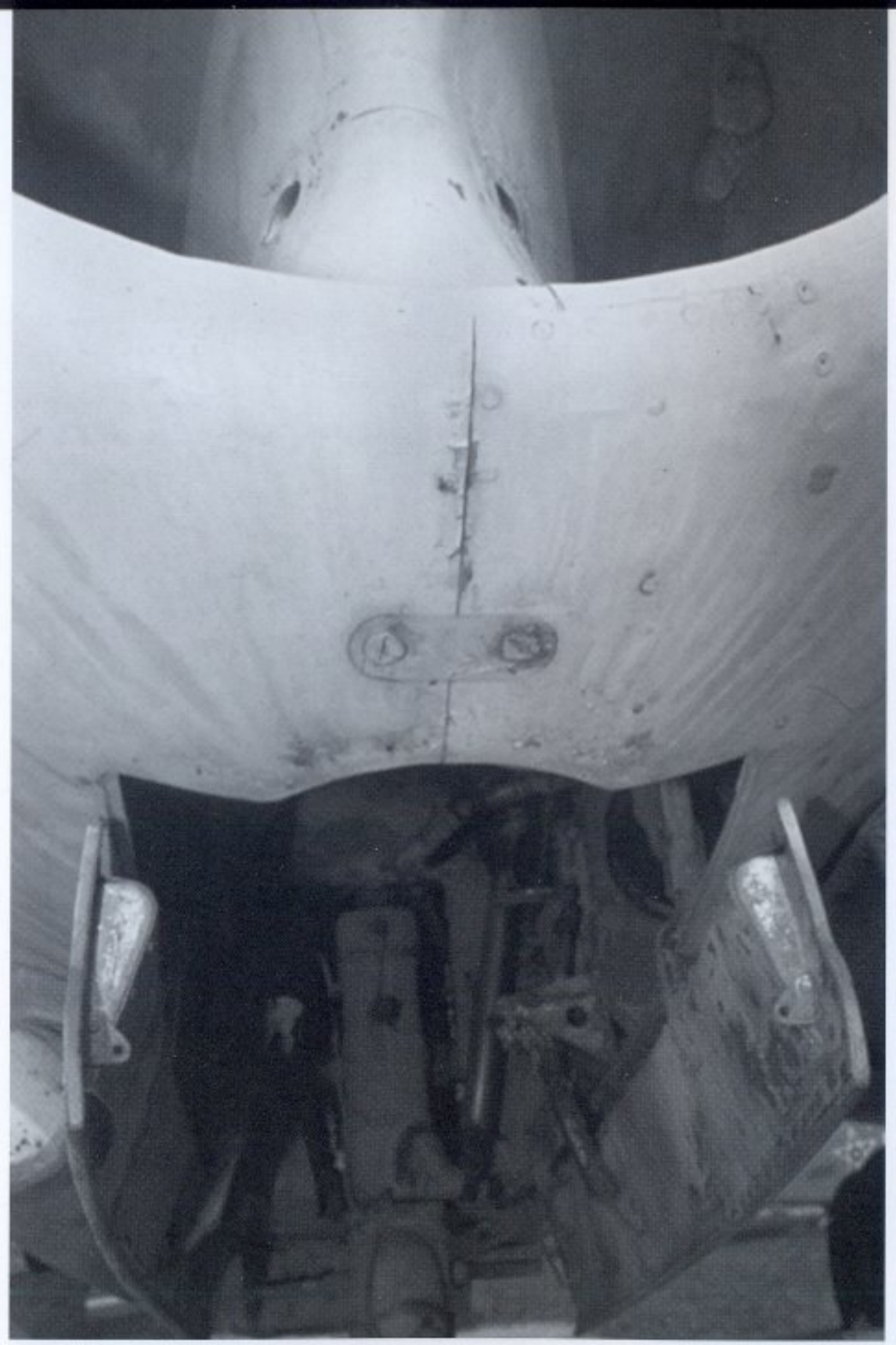
The MiG-17 Fresco-A's port armament consisted of two NR-23 23 mm cannons. Each weapon weighed 39 kilograms (86 lb). Ammunition supply was eighty rounds per cannon. The cannon fairings and their positions in the nose were adopted from the MiG-15bis Fagot-B.

A unique Bulgarian Air Force modification to their Fresco-As was a camera housing placed beneath the nose between the port and starboard gun fairings.

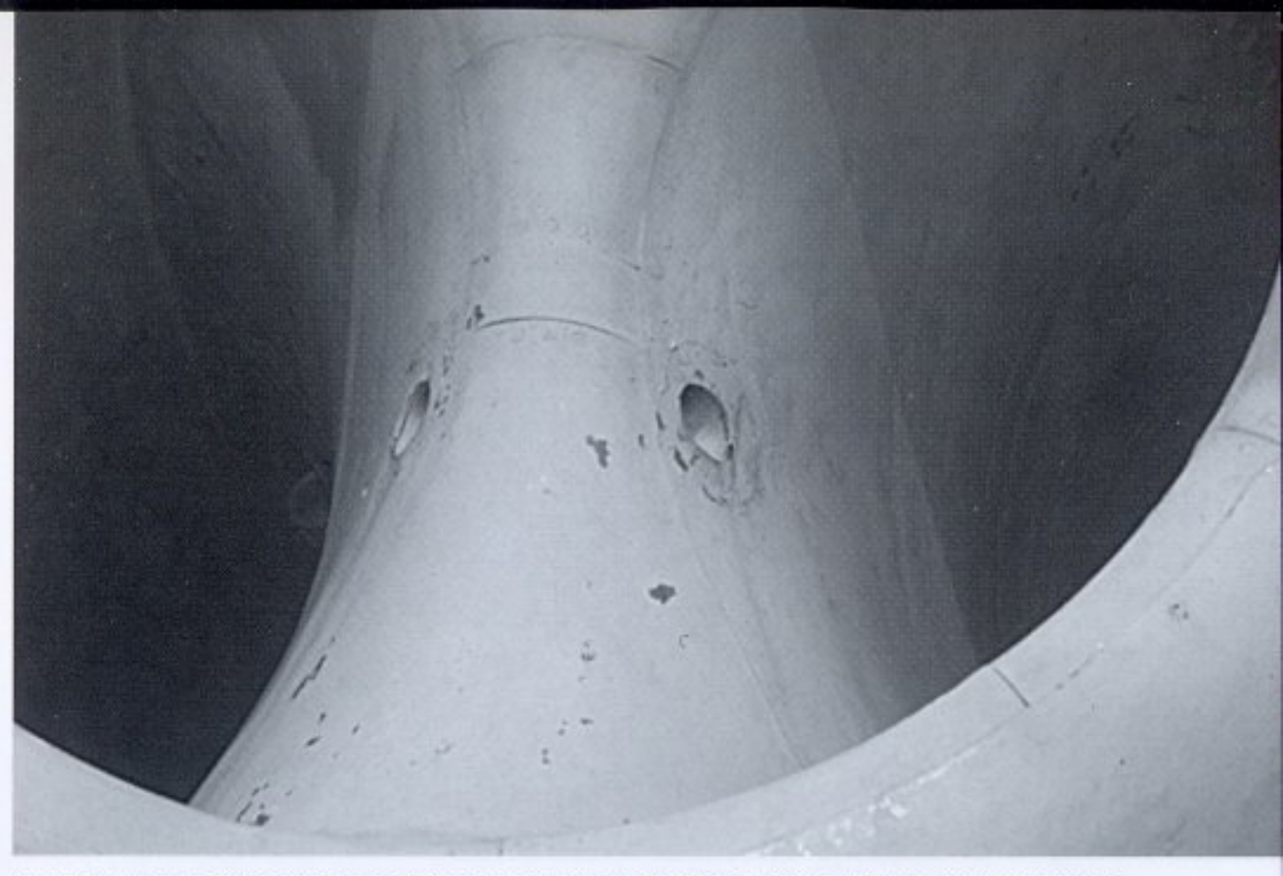
The blistered shell ejection port and a portion of the cover of the starboard N-37 cannon of a Bulgarian MiG-17. The rectangular fairing beneath the nose is the reconnaissance camera housing.

The shell ejection port for the N-37 cannon. The N-37 had a rate of fire of 400 rounds per minute. The ammunition supply was forty rounds.

The camera container of a Bulgarian Air Force MiG-17 Fresco-A viewed from port. The rectangular opening is a shell ejection port.



The nose of a MiG-17 Fresco-A with the nose wheel doors fully extended. The small oval panel between the air intake and nose wheel well is a removable cover concealing a jack pad at the bottom of fuselage frame number 1.



The two openings in the air intake splitter are eyes for a tow rope and are a holdover from the MiG-15. They were sometimes covered. In contrast to the early versions of the MiG-15bis, the Fresco-A never had a landing light in the air intake splitter.

The small panel in the center of the gun blast panel had to be removed before the MiG-17 Fresco-A could be jacked up. The panel was attached with two screws. This was another design feature adopted from the MiG-15.

The nose wheel strut of a MiG-17 Fresco-A. The nose wheels of the late production MiG-15bis and the MiG-17 were identical. Both the Fresco-A and Fresco-C used the same type of nose wheel. A blade antenna for the SRO-1 *Bariy*-M IFF system is visible just above the wheel.

The nose wheel of a MiG-17 Fresco-A. There were two different types of rims used: those with "spokes" as shown here, as well as solid metal rims. Both types were used on the MiG-17 Fresco-A as well as the MiG-17F Fresco-C.

The nose gear of a MiG-17 Fresco-A. The small light on the strut is white. A number of MiG-17s used a green light on the nose gear instead of a white light. The light informed watching ground crew that the nose gear was down.

On a few MiG-17 Fresco-As, the *Bariy*-M blade antenna was relocated from the fuselage spine to the port side of the nose, just behind the nose wheel well. This is not a distinctive feature of the Fresco-A, as a number of MiG-15s were also modified in this manner.

The starboard nose wheel door of a MiG-17 Fresco-A. A feature of the Fresco-A was the application of rounded alloy stiffeners to the edges of the doors. Early MiG-17Fs also had these stiffeners, but they were deleted from the nose wheel doors of most of the Fresco-C series.

The port nose wheel door of a MiG-17 Fresco-A. Apart from the edge stiffeners, the nose wheel doors were nearly identical to those of the MiG-15 Fagot.

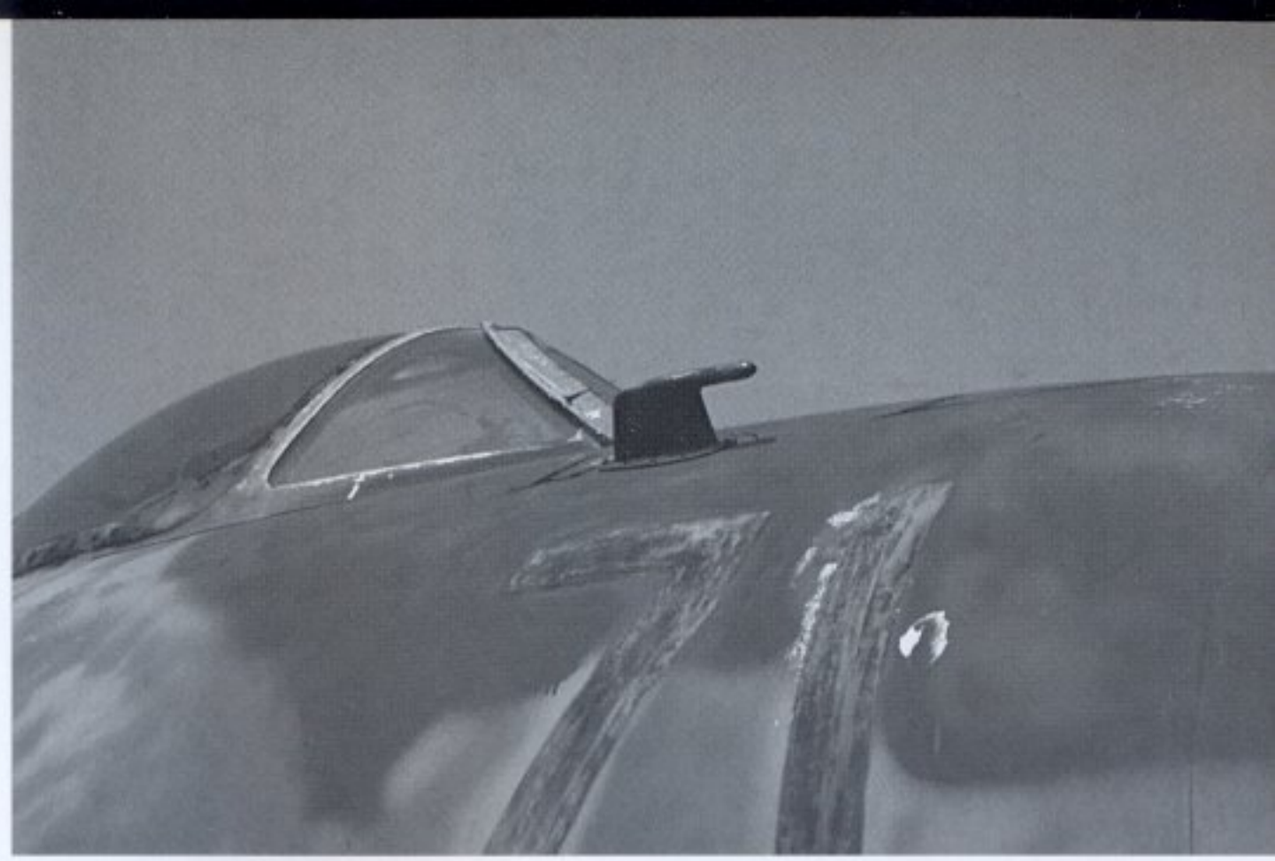
Nonoperational MiG-17 Fresco-As of the Bulgarian Air Force stored among some MiG-15UTI trainers. At the time of their delivery, the Fresco-As were finished in natural metal. The first Bulgarian Fresco-As arrived in 1955 and equipped the 19. Iztrebitelen Aviazionen Polk (19th Fighter Aviation Regiment) based at Graf Ignatievo.

The port lower nose of a MiG-17 Fresco-A. The rectangular slot of the blistered shell ejection port is offset to the inside. The circular access hatch in the triangular panel is not a distinctive feature of the MiG-17 Fresco-A, as a number of MiG-15bis were retrofitted with this access hatch.

The circular access hatch on the lower nose was introduced on all MiG-17 Fresco-As. The snap-lock mechanism that secured the hatch was a feature adopted by Soviet designers from a Messerschmitt Bf 109E-3 delivered to the Soviet Union in 1940.

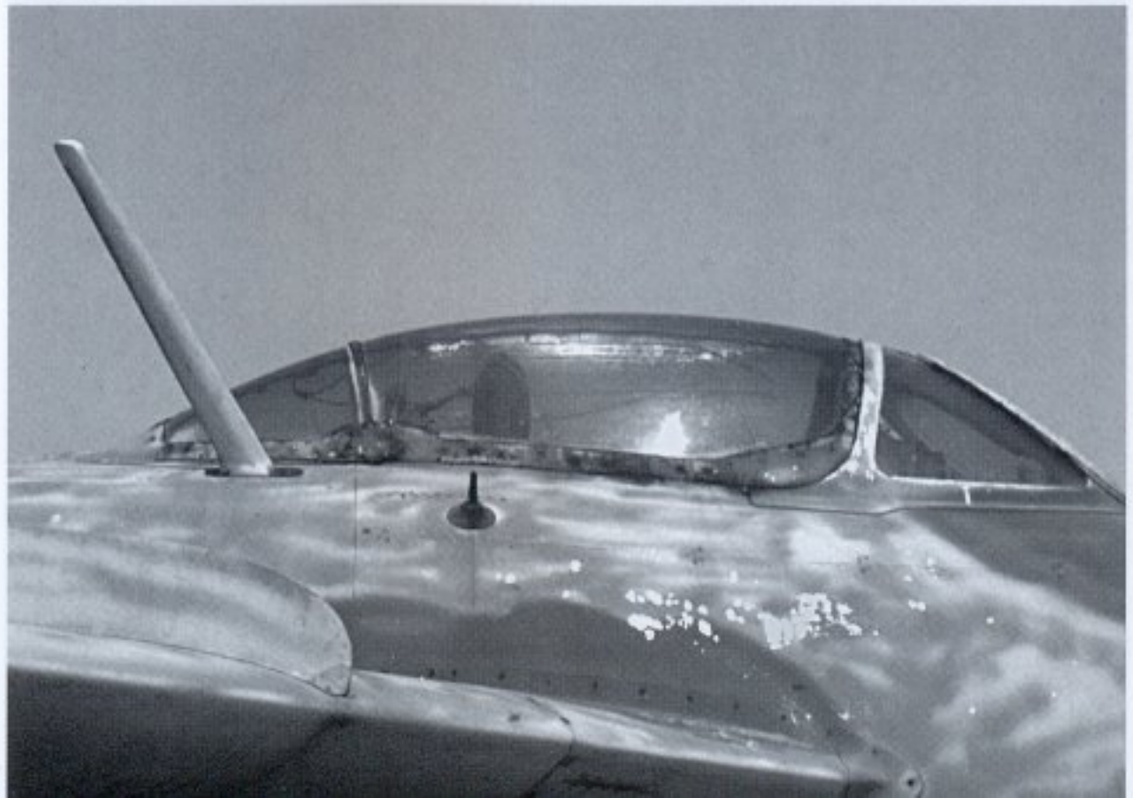
The port rear shell ejection port blister with the ejection chute below the fairing.

Bulgarian Air Force MiG-17 Fresco-A "Red 25." The pitot tube just above the tactical number is an identification feature for the MiG-17, as all MiG-15s lacked this item. The MiG-15 also lacked a windshield deicing system, the tubes for which are visible on the windshield of the MiG-17.



A single pitot tube was located on the starboard nose of all MiG-17 Fresco-As as well as a number of early MiG-17F Fresco-Cs.

Most MiG-17 Fresco-As lacked a rear-view mirror. However, the last production batches were equipped with mirrors, making them indistinguishable from MiG-17F Fresco-Cs. The narrow rear frame of the canopy clearly identifies this plane as a MiG-17 Fresco-A. The MiG-15 had a wider canopy frame and a taller canopy than that of the MiG-17. No operational MiG-15 had a rear-view mirror.



A small wooden antenna mast for the radio antenna was affixed to the starboard side of most MiG-17 Fresco-As and early MiG-17F Fresco-Cs, just below the cockpit. The majority of the Fresco-Cs had no such mast and no wire antenna.

The starboard main wheel well of a MiG-17 Fresco-A. Forward of the wheel well is the T-shaped antenna for the RV-2 *Kristal* (Crystal) radar altimeter. A second radar altimeter antenna was located on the lower surface of the port wing tip.

The port main wheel well. The triangular wheel cover door is an identification feature of the MiG-17, as the MiG-15 had wheel cover doors that were more rectangular in shape.

The port main wheel cover door of a Fresco-A. On some Fresco-As, fabric covered the three circular depressions. The trapezoidal space in the forward portion of the door is also an identification feature of the MiG-17.

The MiG-17 Fresco-A had a single LFSV-45 landing light, mounted in front of the port main wheel well. The position of the landing light was a holdover from the latest version of the MiG-15bis.

A button-shaped antenna for the *Syrena*-2 radar homing and warning system was located just in front of the main wheel well of the MiG-17 Fresco-A.

Unlike the MiG-15, the MiG-17 Fresco-A had a pitot tube on each wing tip. The MiG-15 had a single pitot tube on the starboard wing.

The actuator for the MiG-17's single aileron trim tab was covered by a streamlined fairing on the port aileron. There was no trim tab on the starboard aileron.

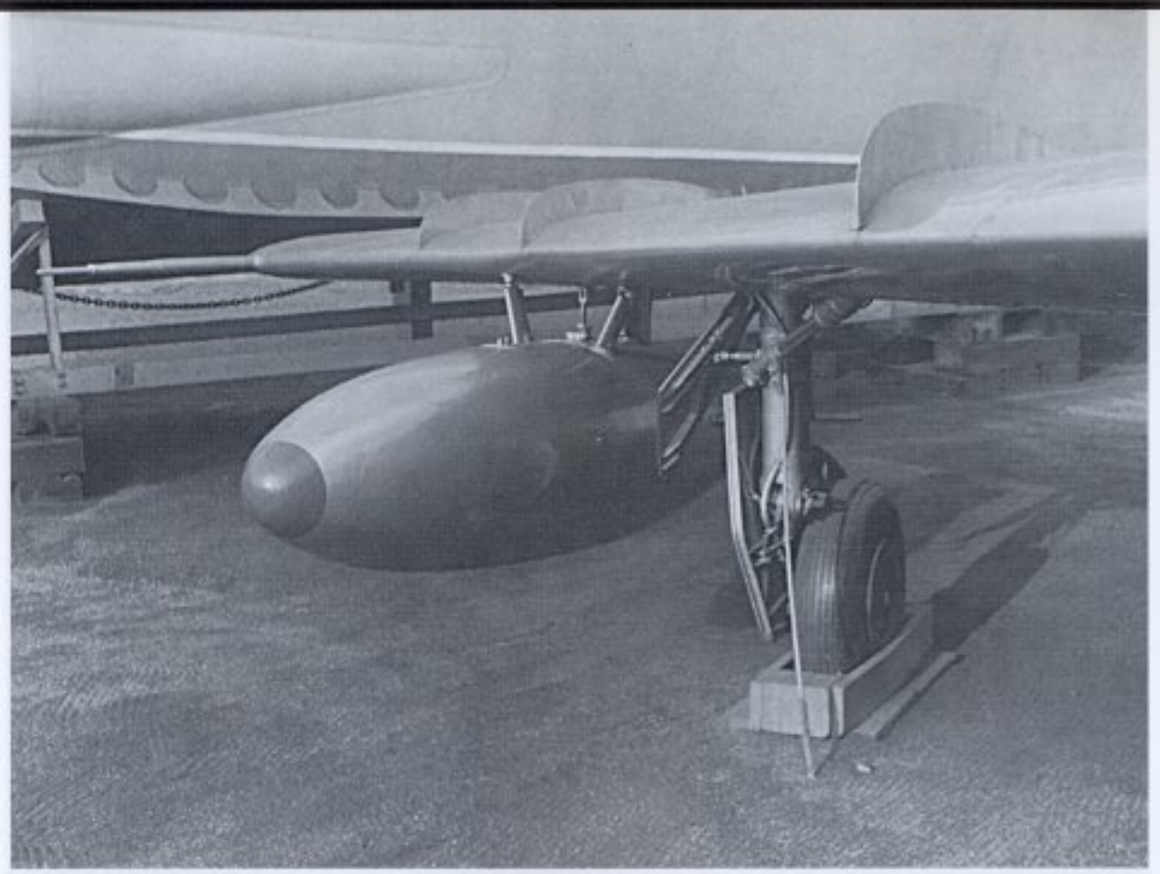
The RV-2 *Kristal* radar altimeter antenna on the lower surface of the port wing tip. The RV-2 and its T-shaped antennas were widely used by a number of contemporary Soviet aircraft and helicopters, including the MiG-15 and the Mil Mi-4 "Hook." The triangular gussets at the corners of the vertical and horizontal members were seen only on the antennas of the Fresco-A and Fresco-C, never on the antennas of the Fresco-D or the MiG-15.

During their operational service, Fresco-As were retrofitted with button antennas for the *Syrena*-2 radar homing and warning system on the rear wing tip and the wing leading edges. This Fresco-A (s/n 1707) previously flew as "Red 621" with the East German Air Force.

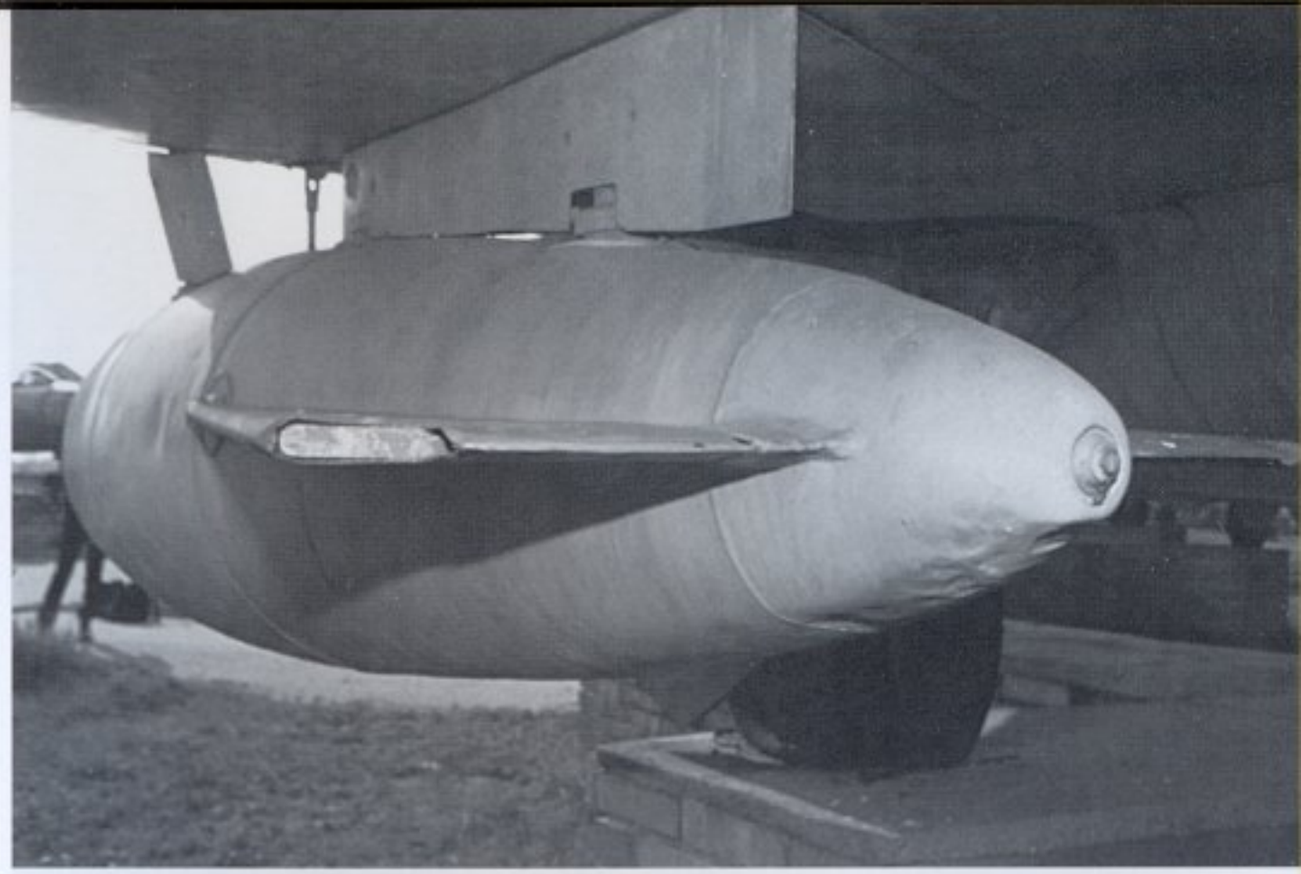
All versions of the MiG-17 had an anit-flutter weight under each wing tip. These were never carried by the MiG-15, and clearly distinguish the Fresco from the Fagot.

A *Syrena*-2 button antenna. These were mounted on both wing leading edges, and an additional antenna was mounted on the trailing edge of the vertical fin under the position light. These antennas were a retrofit to all MiG-17 Fresco-As and were never introduced on the production line.

The *Syrena*-2 button antenna on the rear of the port wing tip. The *Syrena*-2 system was a field modification to the Fresco-A, but became a standard production feature of the Fresco-C.

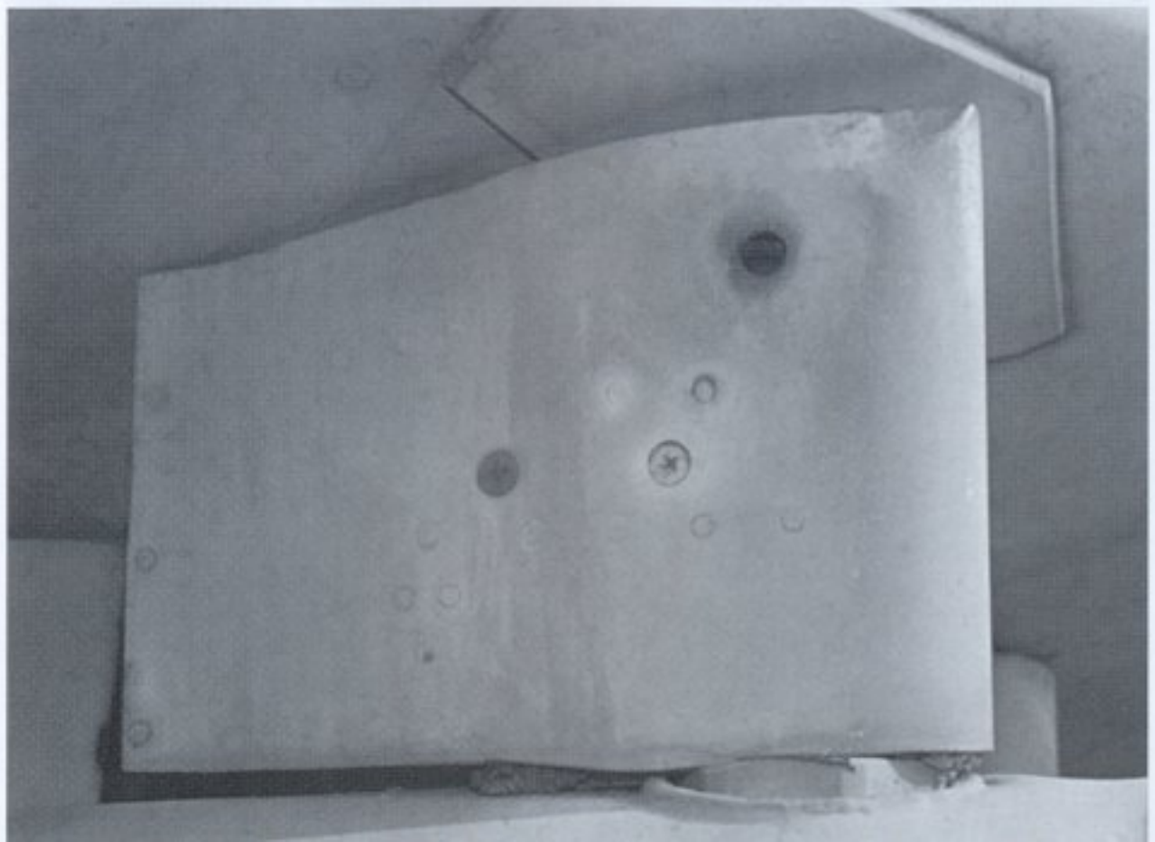


Many Fresco-As, such as this former East German Air Force aircraft, were equipped with 400-liter PTB-400 drop tanks. The PTB-400 drop tank was also widely used on the MiG-15. The three wing fences, as well as the broad main wheel cover door, identify this aircraft as a Fresco.



Aft portion and stabilizing fin of a PTB-400 drop tank mounted on a MiG-17 Fresco-A.

A sway brace was used on each side of the drop tank to stabilize it in flight.



The forward suspension point of the PTB-400 was the underwing mounting lug for the D4-50 bomb rack.

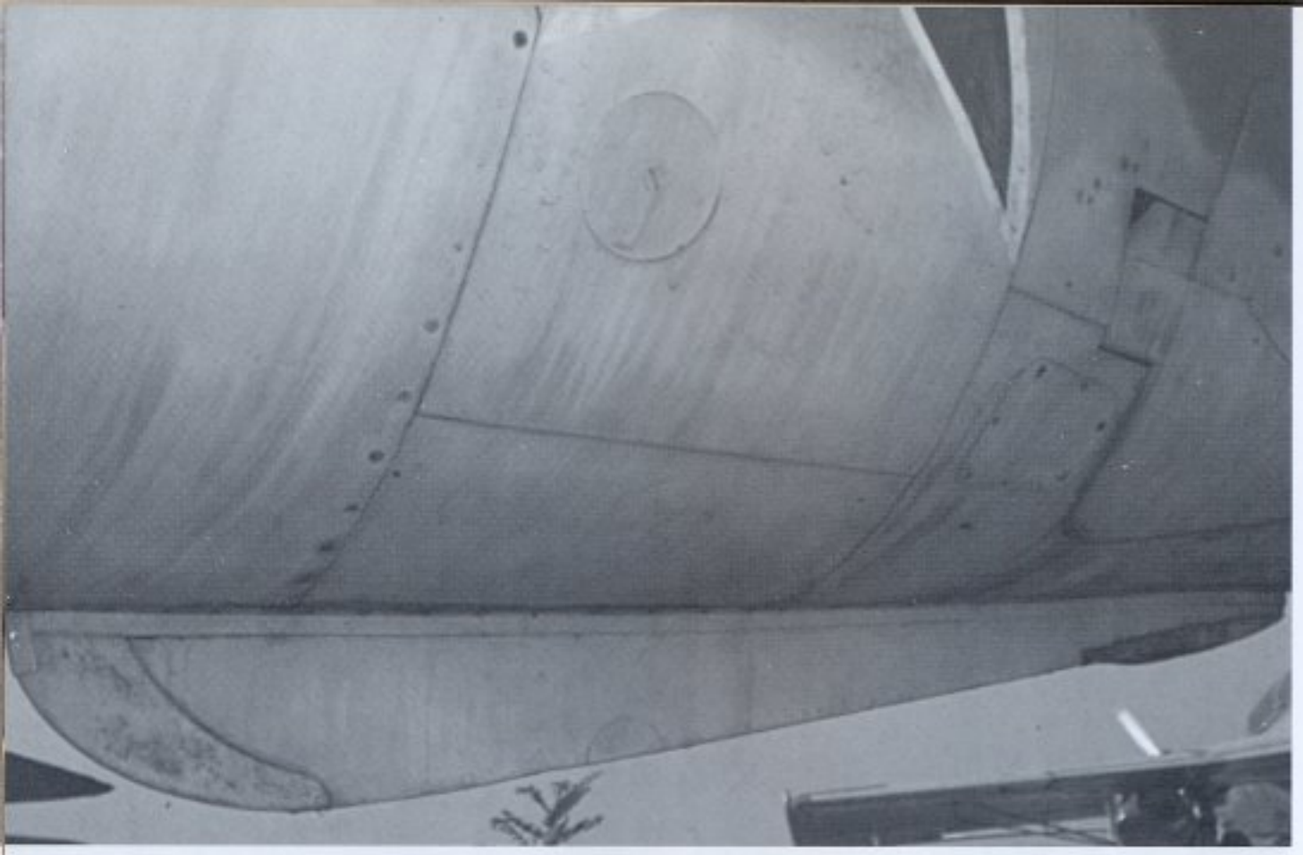
(Left) The starboard main landing gear of a Fresco-A. A distinctive feature for the Fresco-A is the oval panel just in front of the main wheel well. MiG-15s had a circular panel in this area, offset to the left of the starboard main wheel well. The MiG-15 and the MiG-17 Fresco-A had a single brake line, while Soviet and Polish-built Fresco-Cs had two brake lines attached to the main wheel strut.

(Above) The starboard main landing gear door of a Fresco-A had a small blister, which provided clearance for the outboard end of the wheel axle when the gear was retracted, on its lower portion. All Fagots had flush main gear doors. Inboard and outboard wheel rims were different. The "spokes" were only on the outer rim.

(Above) The starboard upper main landing gear door of a Fresco-A. This door was identical on the Fresco-A and the Fresco-C.

(Right) The inside of the main landing gear door of the MiG-17 had several stiffeners. The same main gear door design was used on both the Fresco-A and the Fresco-C. Compared to that of the MiG-15, the MiG-17's main gear door was wider. The single brake line identifies this aircraft as a Fresco-A.

(Below) The inner main wheel rim of a Fresco-A. The same type of main wheel was also used on the MiG-15 and the MiG-17F Fresco-C.



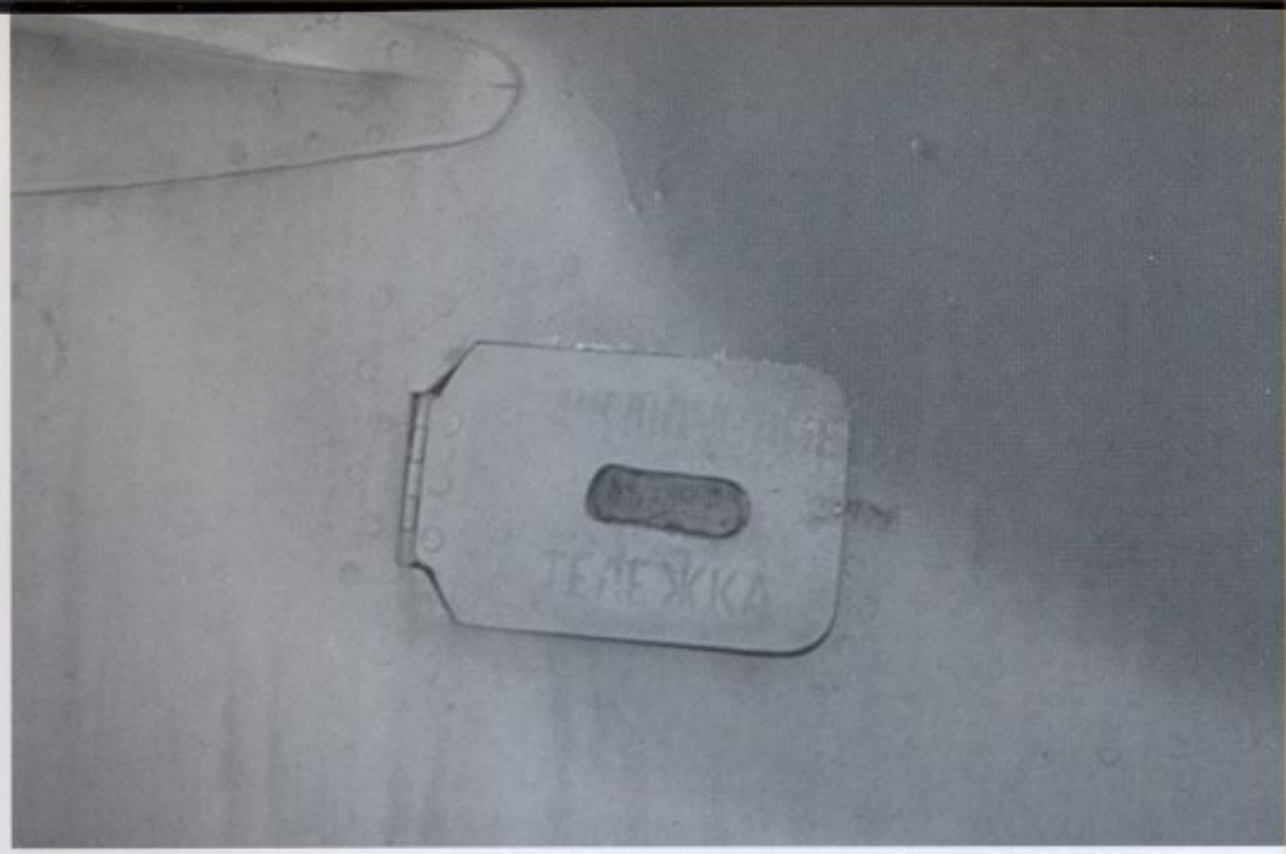
The ventral fin of a MiG-17 Fresco-A. The ventral fin was a feature of all MiG-17 production variants. All MiG-15s and preproduction MiG-17s lacked a ventral fin, having instead a small tail bumper.

A view from below showing the tail bumper on the aft end of the ventral fin of a MiG-17 Fresco-A. At top the fairing attached to the port air brake is visible.

The leading edge of the MiG-17's ventral fin was reinforced with a doubler.

A tail bumper was mounted on the rear portion of the ventral fin of the MiG-17. The MiG-15 had a simple small bumper attached directly to the skin of the rear fuselage.

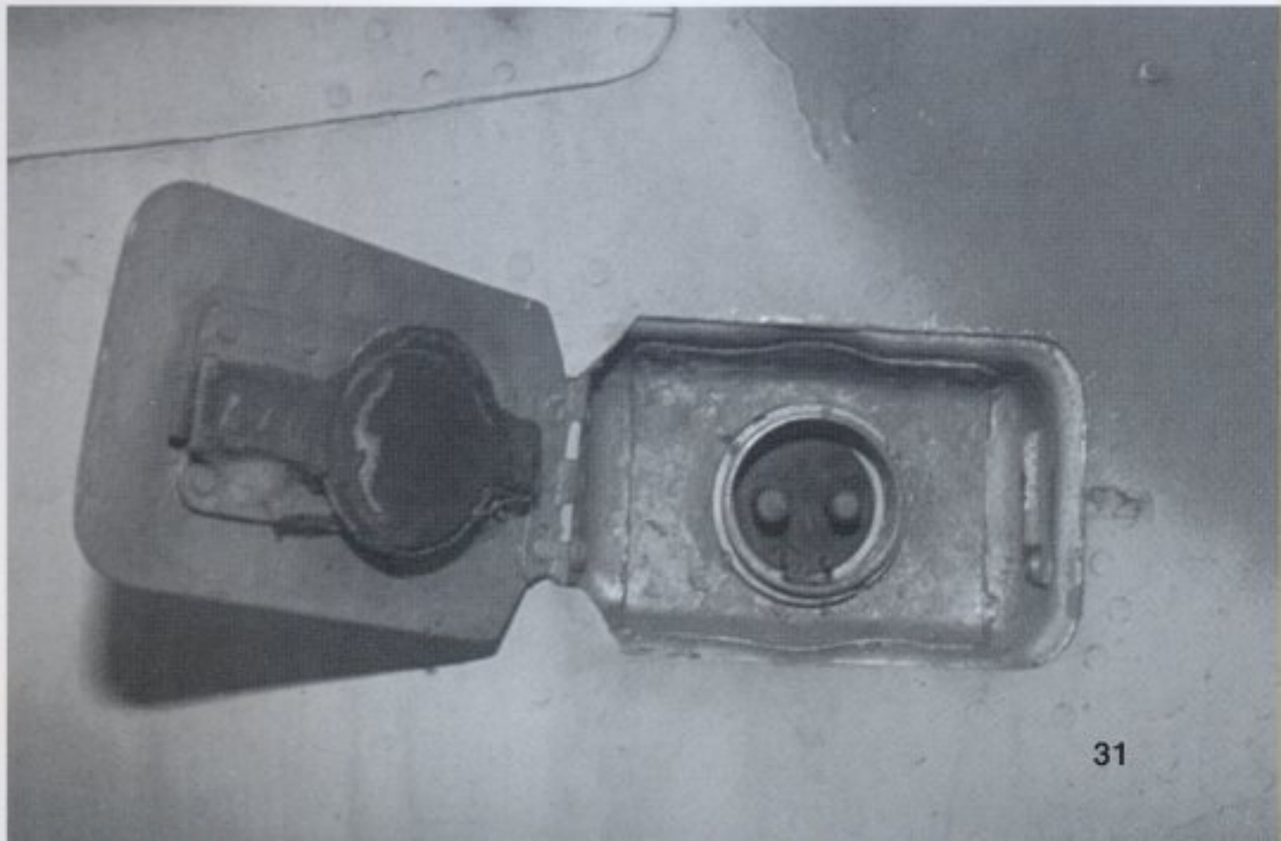
The air brakes of an early production MiG-17 Fresco-A of the Bulgarian Air Force. The fairings on the air brakes were the same size on the majority of Fresco-As.



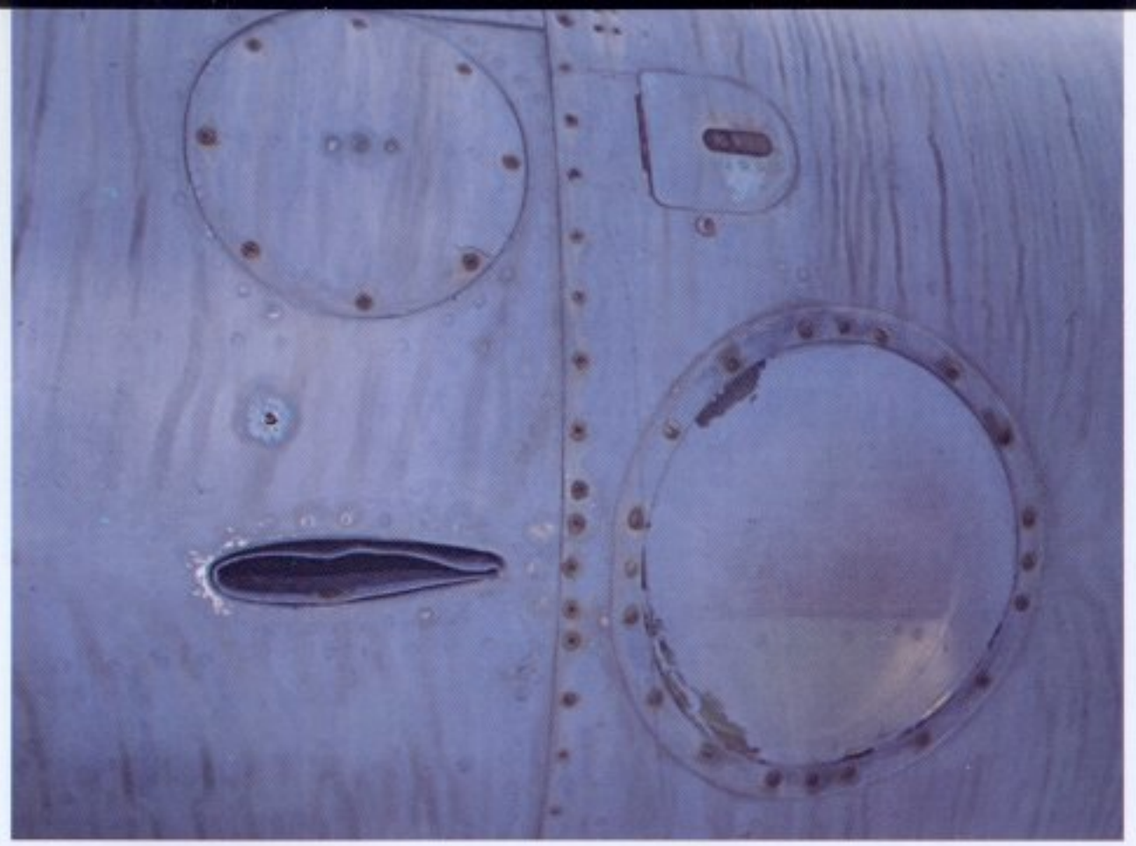
All MiG-17s had an access door for an external electrical power connection in the same spot on the port rear fuselage. The external power connection on all MiG-15 variants was behind the trailing edge of the port wing and higher on the fuselage.

There were a few MiG-17 Fresco-As with larger, more pronounced fairings on the air brakes.

The open door for the external electrical power connection. All Fresco-As and Fresco-Cs had a 28.5 volt main electrical system with a GSR-3000 generator as the main power source. This type of generator was adopted from the MiG-15.



The underside of a MiG-17 Fresco-A fuselage. The square panel covers an MRP-48P *Khrizantema* marker beacon receiver, and the circular panel covers an ARK-5 *Amur* radio compass. Both devices also equipped the MiG-15. Forward is to the left in this photo.

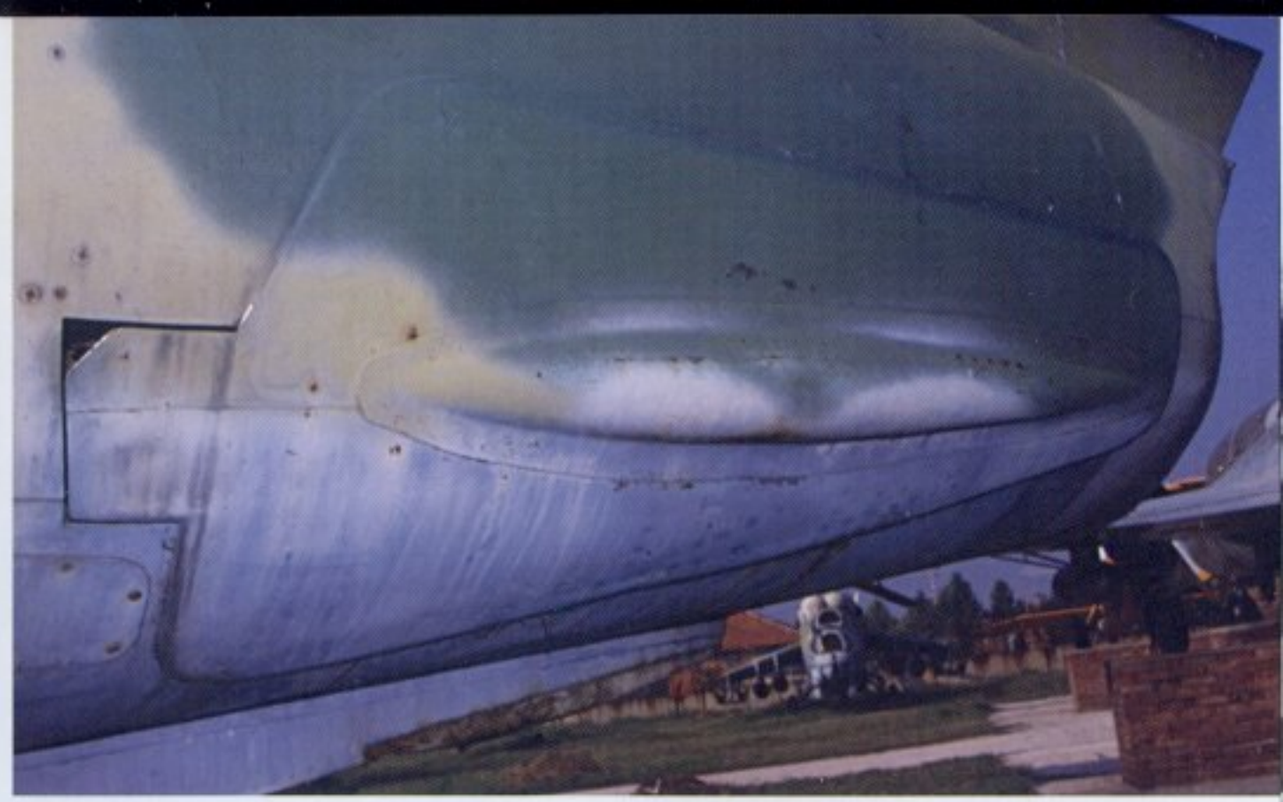


The fuselage of a MiG-17 Fresco-A with the circular panel for the ARK-5 radio compass.

This panel in front of the ventral fin of a MiG-17 Fresco-A houses the MRP-48P *Khrizantema* marker beacon receiver.

The extreme lower aft end of a MiG-17 Fresco-A fuselage with the nozzle of the VK-1 non-afterburning jet engine visible to left. Between the nozzle and the aft end of the ventral fin are two small access panels.

The rear fuselage of a Fresco-A. Distinctive features of the Fresco-A were the small airbrakes and the location of the EKSR-46 signal flare dispenser on the starboard rear fuselage, visible just in front of the Bulgarian national marking. On the Fresco-C, the EKSR-46 flare dispenser was located below the base of the starboard horizontal stabilizer.



Each air brake of the Fresco-A measured 0.64 square meters (6.9 sq ft) in area. The shape of the air brakes of the Fresco-A was different from that of preproduction MiG-17s. Air brakes of production MiG-17s, unlike the prototypes and preproduction aircraft, had a large external fairing that provided space for the actuating mechanism. The Fresco-A's air brakes were found to be inadequate and were enlarged in later models.

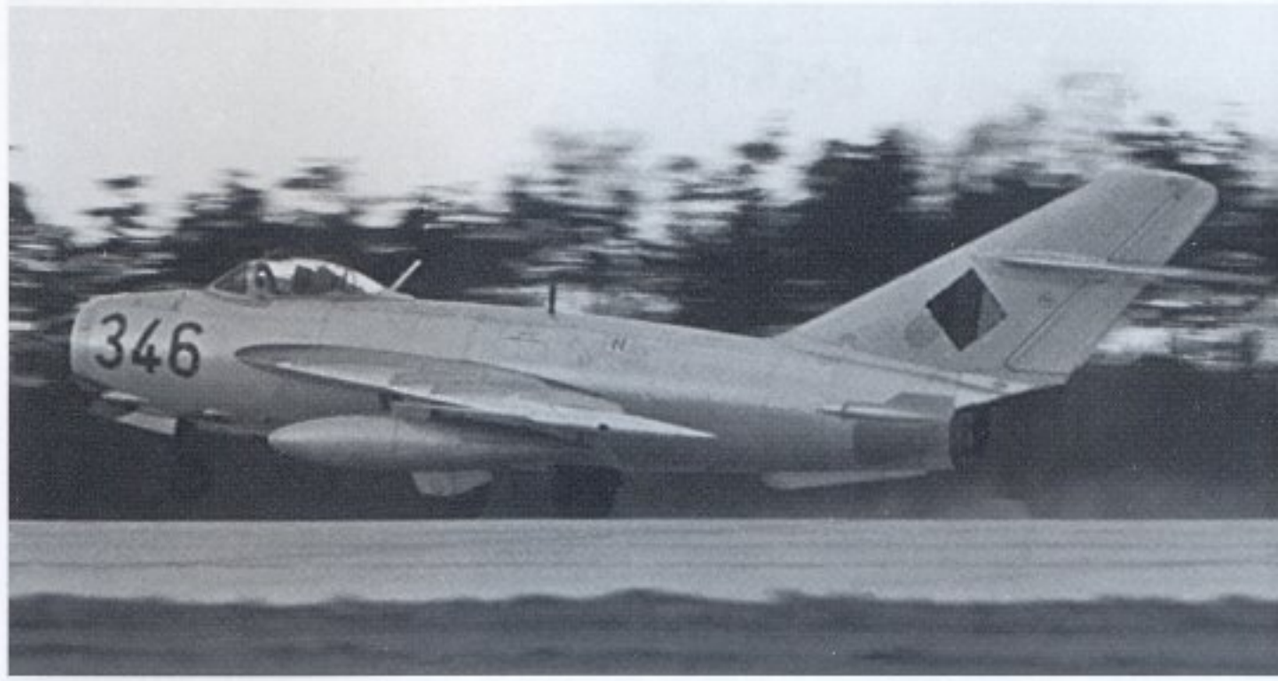
The starboard air brake of a Fresco-A. The position of the square access hatch is unique to the MiG-17 Fresco-A. On the Fresco-C, this hatch was relocated forward to a position just above the leading edge of the ventral fin.

Port air brake of a Fresco-A. The access panel in front of the air brake was square on the Fresco-A, but circular on the MiG-15bis Fagot-B.

(Left) "Red 443," an early Romanian Air Force MiG-17F. The Fresco-C has a blade antenna on the upper fuselage for the SRO-1 *Bariy*-M IFF transponder and a small pitot tube just below the nose panel for the radio equipment. These two items were deleted from most MiG-17Fs. In the background is a MiG-15UTI trainer.

(Below) These Polish Air Force Lim-5s represent the late equipment standard of the Fresco-C. All Lim-5s in this lineup lack the dorsal transponder blade antenna as well as the small pitot tube below the upper nose access panel. Instead, an SRD-1 radar rangefinder antenna has been installed on the nose access panel. Button antennas for the *Syrena*-2 system are mounted on the leading edges of the wing.

"Red 810," a Polish-built MiG-17F (s/n 1C-08-12) of the East German Air Force, still carries a dorsal blade antenna for the SRO-1 *Bariy*-M IFF transponder but lacks a pitot tube on the starboard side of the nose. An SRD-1 radar rangefinder antenna has been mounted atop the nose access panel.



"Red 346," an East German MiG-17F (s/n 1C-07-23) carries the early style of national markings that were applied until autumn 1959. The Fresco-C is still equipped with the dorsal blade antenna for an SRO-1 *Bariy*-M IFF transponder, but lacks the button antennas for the *Syrena*-2 radar homing and warning system. This particular MiG-17 is now on exhibit at the German Air Force Museum at Berlin-Gatow.

USAF MiG-17F "White 055" (s/n 1C-07-18) at Groom Lake, Nevada. This was a Polish-manufactured Fresco-C, which previously had seen service in East Germany as "Black 707" before it was transferred to the Syrian Air Force as "Black 1401." It fell into Israeli hands at Betset airfield on 12 August 1968. Operational tests of the MiG-17 under the code name Have Drill were performed during the first half of 1969. A U.S.-manufactured communication antenna has been mounted under the nose. The red stripe on the rear fuselage and the red rudder were of Israeli origin.

Under new management! The former Syrian Air Force MiG-17F "Black 1033," captured by the Israelis at Betset landing strip in Western Galilee on 12 August 1968, flies as "White 002" in U.S. markings. Evaluation of this MiG-17F by the USAF, known as Project Have Ferry, took place between January and June 1969 at Groom Lake, Nevada, which is part of the vast Nellis test range. The white-red-white stripes on the rear fuselage and the red rudder were applied by the Israelis.

The nose of "Red 150," a Polish-built Lim-5 that previously flew with the 27. Iztrebitelen Aviazionen Polk (27th Fighter Aviation Regiment) based at Baltchik on the Black Sea. It is now in the Air and Space Museum at Krumovo Air Base near Plovdiv, Bulgaria. Typical of early production Fresco-Cs is the small pitot tube slightly below the upper nose access panel. The majority of MiG-17Fs did not have this item.

The circular access hatch in the starboard side of the air intake splitter is a standard feature of all Fresco-Cs. It was not present on the Fresco-A.

All Soviet- and Polish-built MiG-17Fs had a small square access hatch on the port side of the nose.

The starboard side of the nose landing gear of a MiG-17F.

Port side of a MiG-17's nose gear. Immediately aft of the port wheel well door is the blade antenna of the SRO-1 *Bariy*-M IFF system.

Some MiG-17Fs were equipped with solid nose wheels, although most MiG-17Fs had spoked nose wheels. The top edge of the rear portion of the port gun blast panel is horizontal, an identifying feature of the MiG-17F. On the Fresco-A the top edge of the rear portion of the port gun blast panel curved around the fairing of the upper 23 mm cannon.

The fairing for the starboard N-37 cannon of a Bulgarian Air Force MiG-17F. The small access hatch above the fairing is very unusual for MiG-17Fs and was carried only by a few Fresco-Cs.

The two blistered shell ejection ports on the port side of the nose of a standard production MiG-17F Fresco-C. The rectangular opening in the middle of the forward blister is for ejection of the cartridge links and is a feature typical of the majority of Fresco-Cs. The Fresco-A had only a single port.

The starboard side ejection port for the N-37 cannon of a MiG-17F. The upper part of the blister was more pronounced when compared with that of the Fresco-A or the MiG-15.

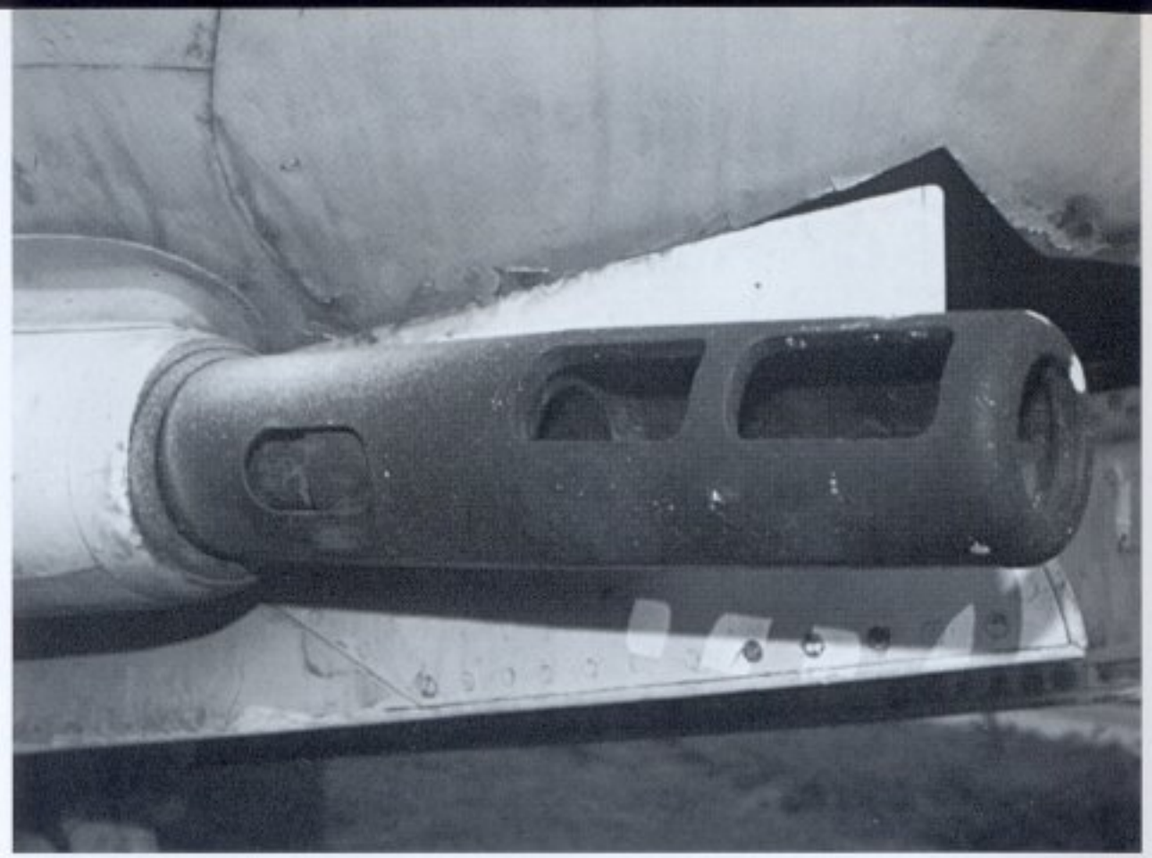
A small circular opening just above the port rear shell ejection port had a triangular fairing. The fairing was a unique feature of the MiG-17F.

With the introduction of the SRD-1 *Radal* radar rangefinder antenna, the upper nose access panel of the Fresco-C could no longer be completely removed as on the MiG-15 and Fresco-A. Instead, it was attached with two hinges to the front of the bay for the R-800 radio equipment and batteries. The stiffeners on the inside of the panel were different from those of the MiG-15.

The small square door mounted on the port side of the nose is a typical feature for the Polish- and Soviet-built MiG-17F. All Fresco-As lacked this door. Chinese-manufactured Shenyang J-5s and F-5s had a similar door on both sides of the nose.

The rectangular shell ejector ports for the N-37 cannon on the starboard nose.

Shell and cartridge link ejector ports for the aft 23 mm cannon on the port nose.

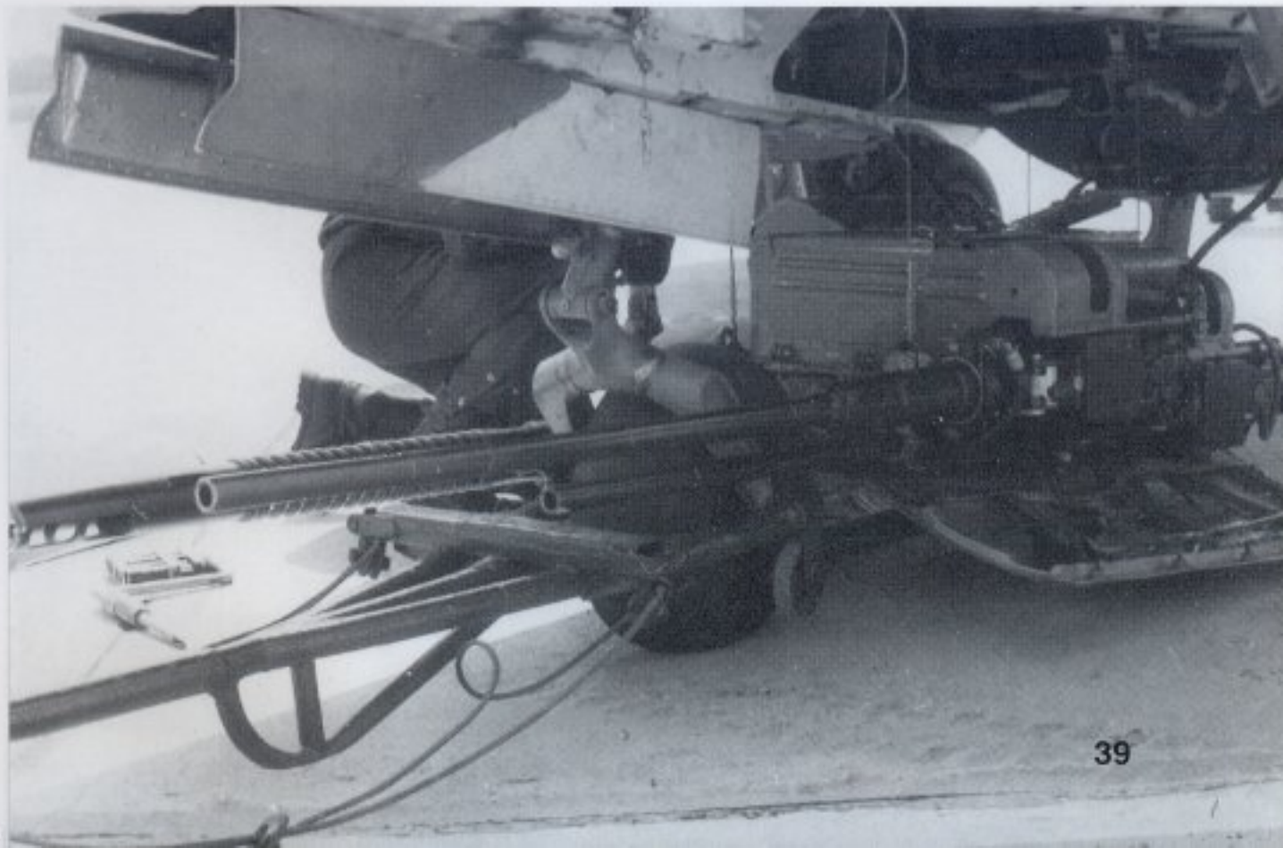


The muzzle of the N-37 cannon. Late production MiG-17Fs had an N-37D cannon. Externally there was no difference between the two versions.

"Black 1033," a Syrian Air Force MiG-17F, lacks the port nose access hatch that became standard on all Fresco-Cs. In 1968, the Israeli government shipped this MiG-17F to the United States, where it became "White 002" in USAF service under Project Have Ferry.

With the help of a built-in winch, the cannon platform of a MiG-17F could be lowered for inspection, maintenance, and rearming. This system allowed very easy access to the cannons and the ammunition boxes.

The lowered MiG-17F gun platform with its two NR-23 cannons and one N-37 cannon. The ammunition boxes are above the cannons.

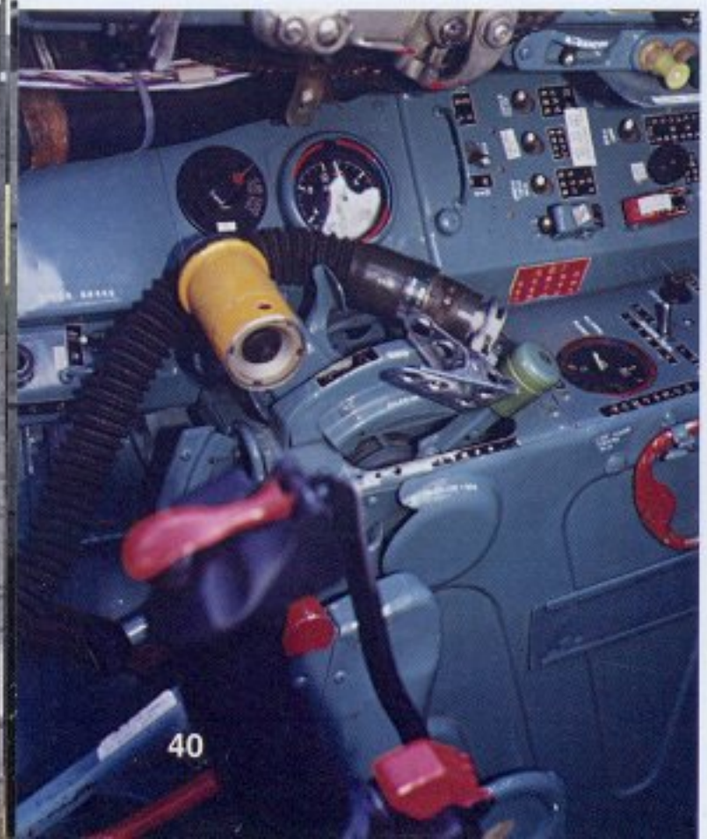


The port cockpit console of a Chinese-built J-5 (s/n 2705), registered in the United States as N1VC. The lever with the yellow handle is the throttle; the black button in its center is a push-to-talk radio switch. The green-handled lever is the aileron trim control. Below it are the flap and air brake controls.

Port side of N1VC's cockpit. Instruments include a KUS-1200 airspeed indicator, a VAR-75 rate-of-climb indicator, and an AGI-1 artificial horizon.

The starboard cockpit console with a portion of the instrument panel of N1VC.

Throttle quadrant of N1VC. This Fresco-C belongs to the Commemorative Air Force at Midland, Texas.



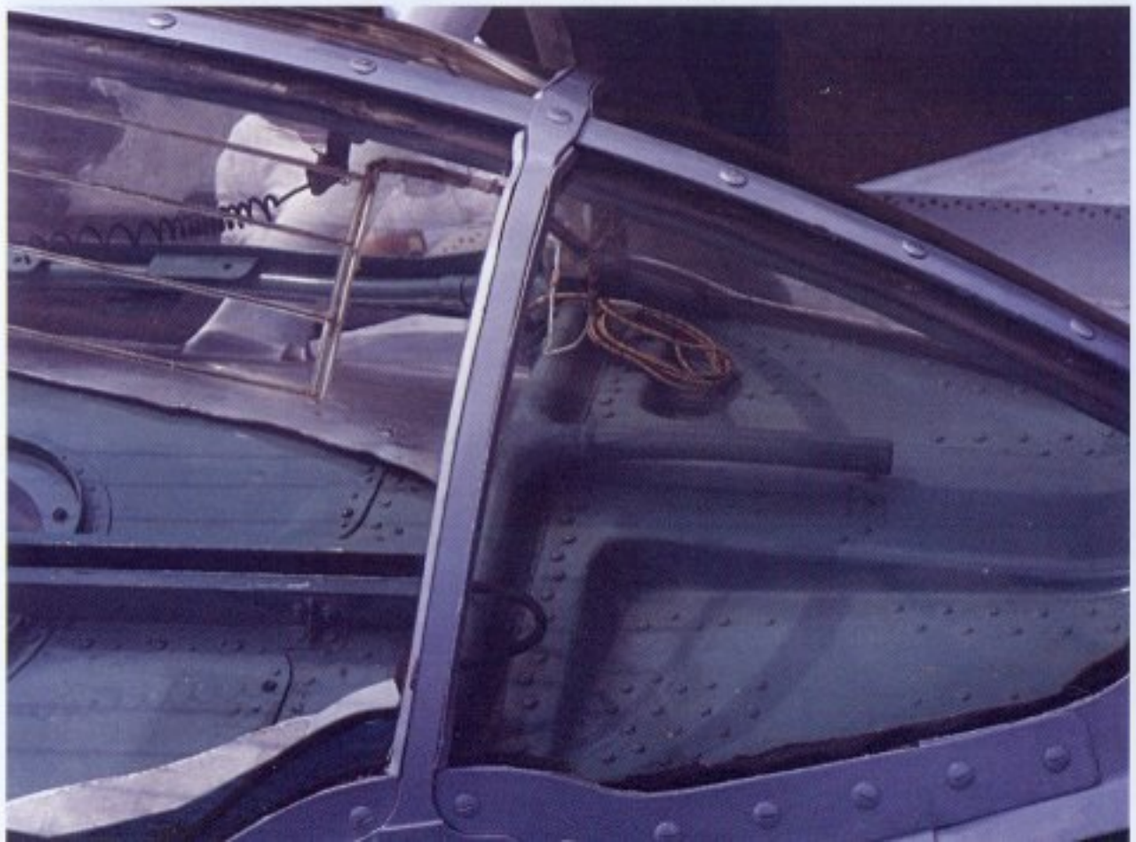
Forward portion of the starboard cockpit console of N1VC.

The control stick of a J-5. Cockpit instrumentation included a VD-17 altimeter, a KES-857 fuel indicator, an SUP-7 position indicator, and a DGMK-3 compass indicator. The MiG-17F was also equipped with a TE-15 Machmeter and an EM-100 manometer.

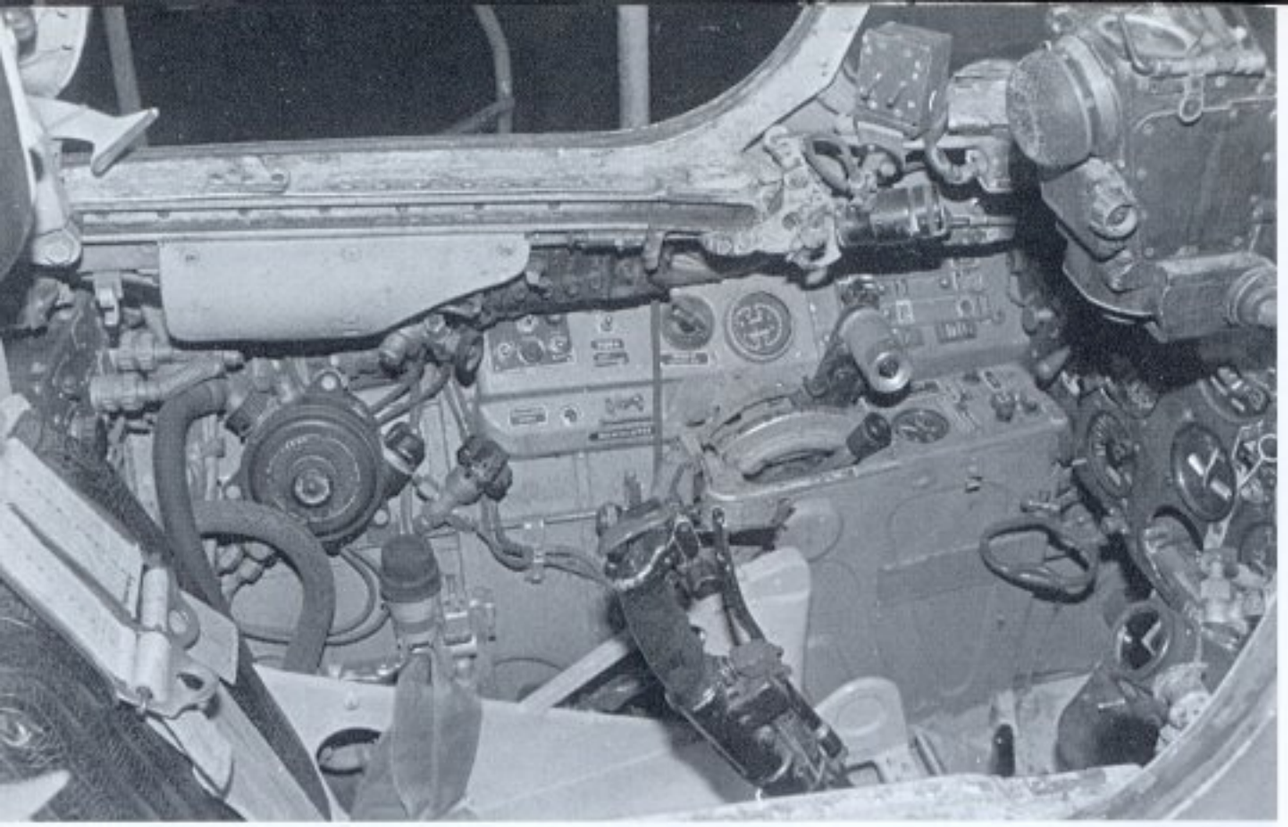
The SRD-1M radar rangefinder antenna. Most MiG-17Fs were equipped with this device. The SRD-1 and SRD-1M were never installed on the MiG-15 and seldom on the MiG-17.

All Fresco-Cs had a rear-view mirror on top of the canopy. On the windshield were dispersal tubes for the liquid deicing system, a system lacking from the MiG-15. The presence of the tubes clearly identifies this as a MiG-17.

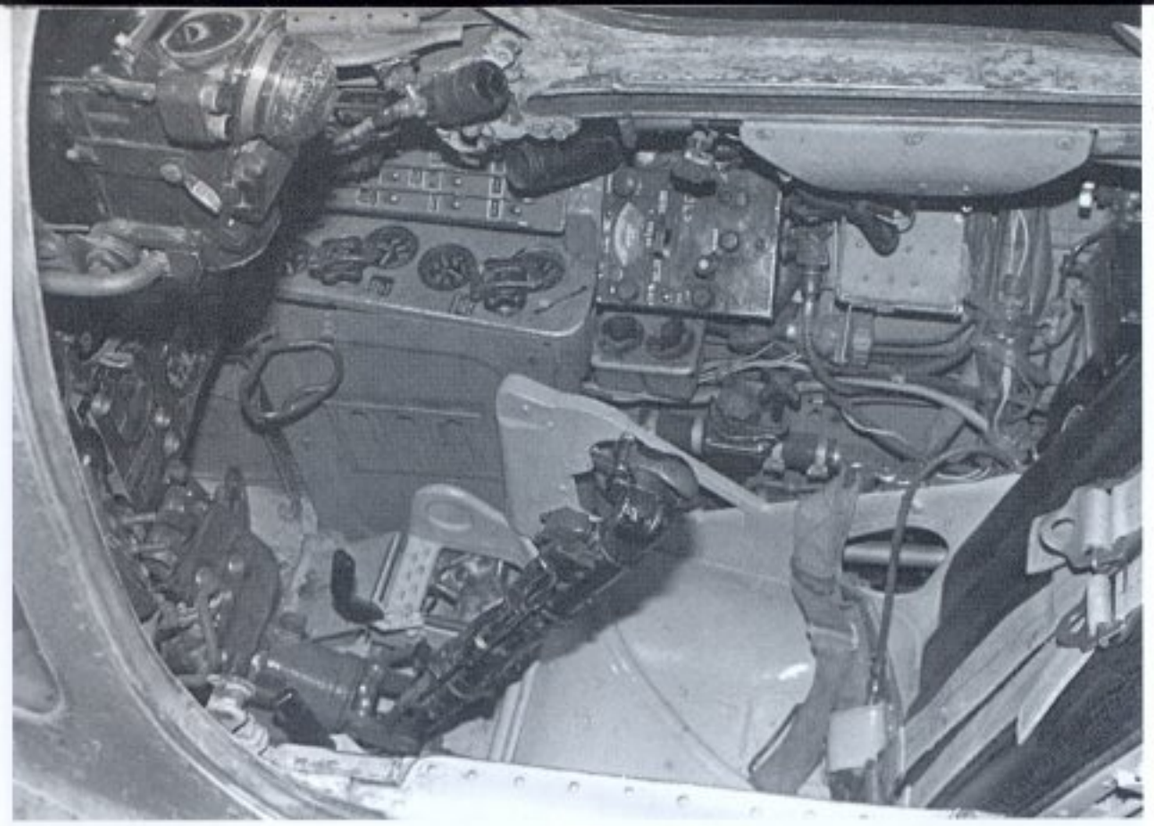
The aft portion of the cockpit canopy of a Shenyang J-5. Heating wires for deicing were embedded in the glass. The MiG-15 lacked an electrical canopy deicing system.



The rear canopy frame and starboard antenna mast of East German MiG-17F "Red 502" (s/n 1C-09-02). The rear canopy framing of the MiG-17F was much more narrow than that of the MiG-15.



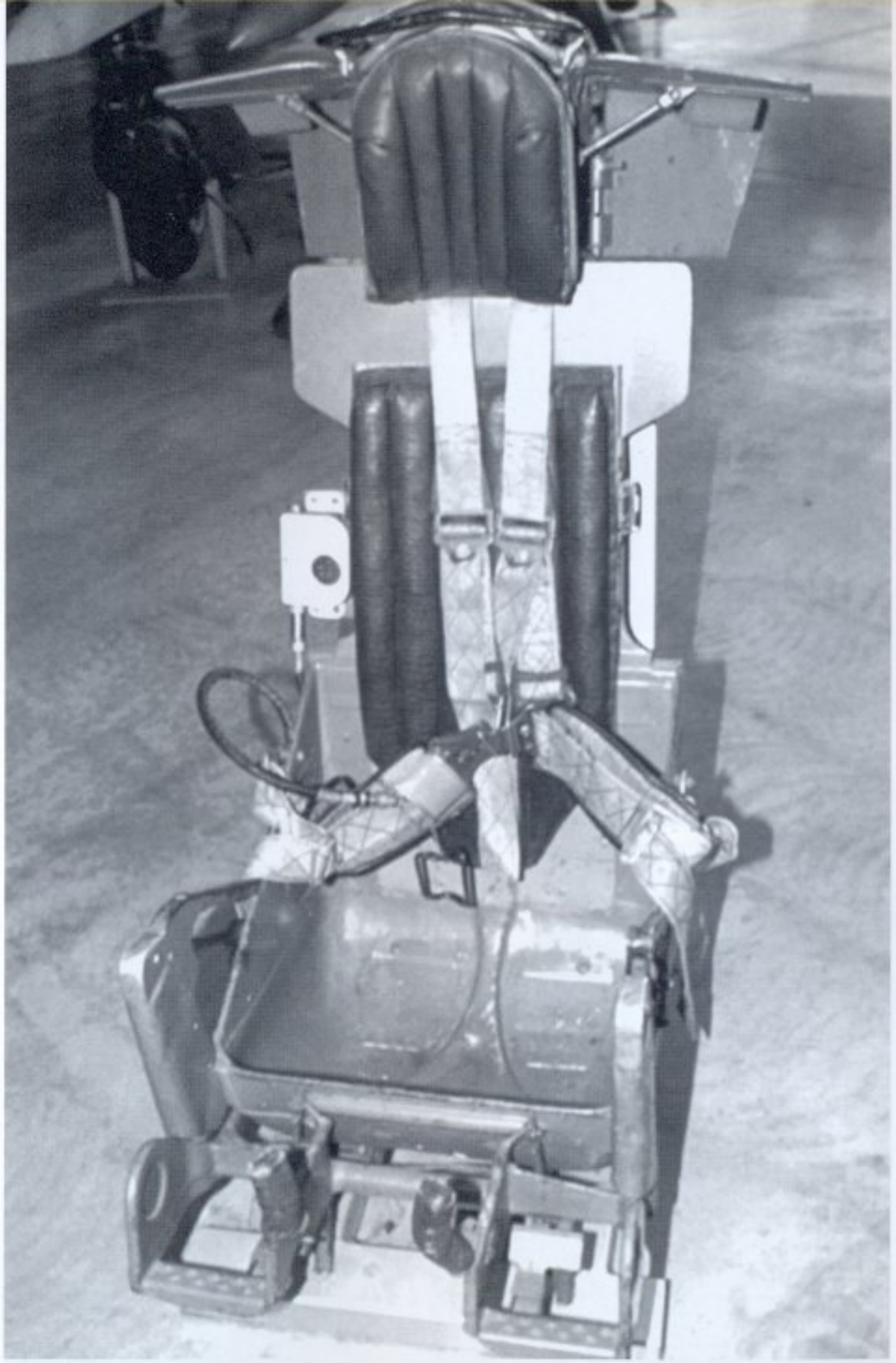
Port side of the cockpit of a former Moroccan Air Force MiG-17F (s/n 1406016). A nonstandard feature of this particular aircraft is the square switch box mounted on the left canopy frame. This box contained the firing switches for unguided rockets. This Fresco-C was flown to the United States in December 1983 in a C-130 to become part of the collection of the Champlin Fighter Museum and is now at the Museum of Flight, Seattle, Washington.



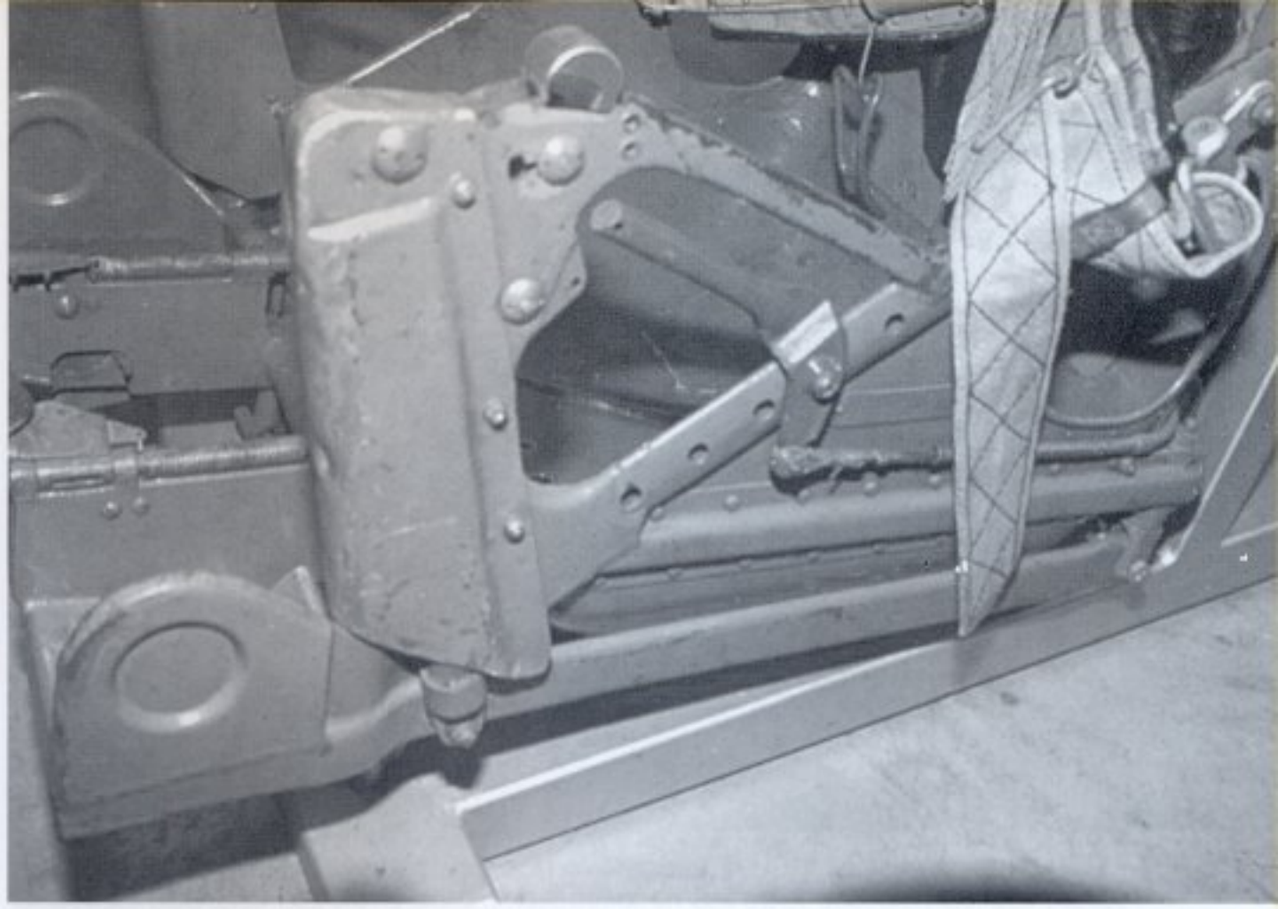
Starboard side of the cockpit of a MiG-17F at the National Museum of the U.S. Air Force, Dayton, Ohio. The Fresco-C was equipped with an ASP-4NM automatic gun sight.

The headrest of a MiG-17F's ejection seat. Compared with that of the MiG-15 and the MiG-17 Fresco-A, the MiG-17's headrest was much larger. The stabilizing fins of this example have been fully deployed.

The instrument panel of the MiG-17F at the National Museum of the U.S. Air Force. Most of the instrument labels are Cyrillic, but the fabric tag adjacent to the gun sight carries the German inscription "Kab. Dach-Abwurf" ("canopy jettison"). This may indicate that the aircraft once was overhauled at the Flugzeugwerke (Aircraft Factory) at Dresden in East Germany.

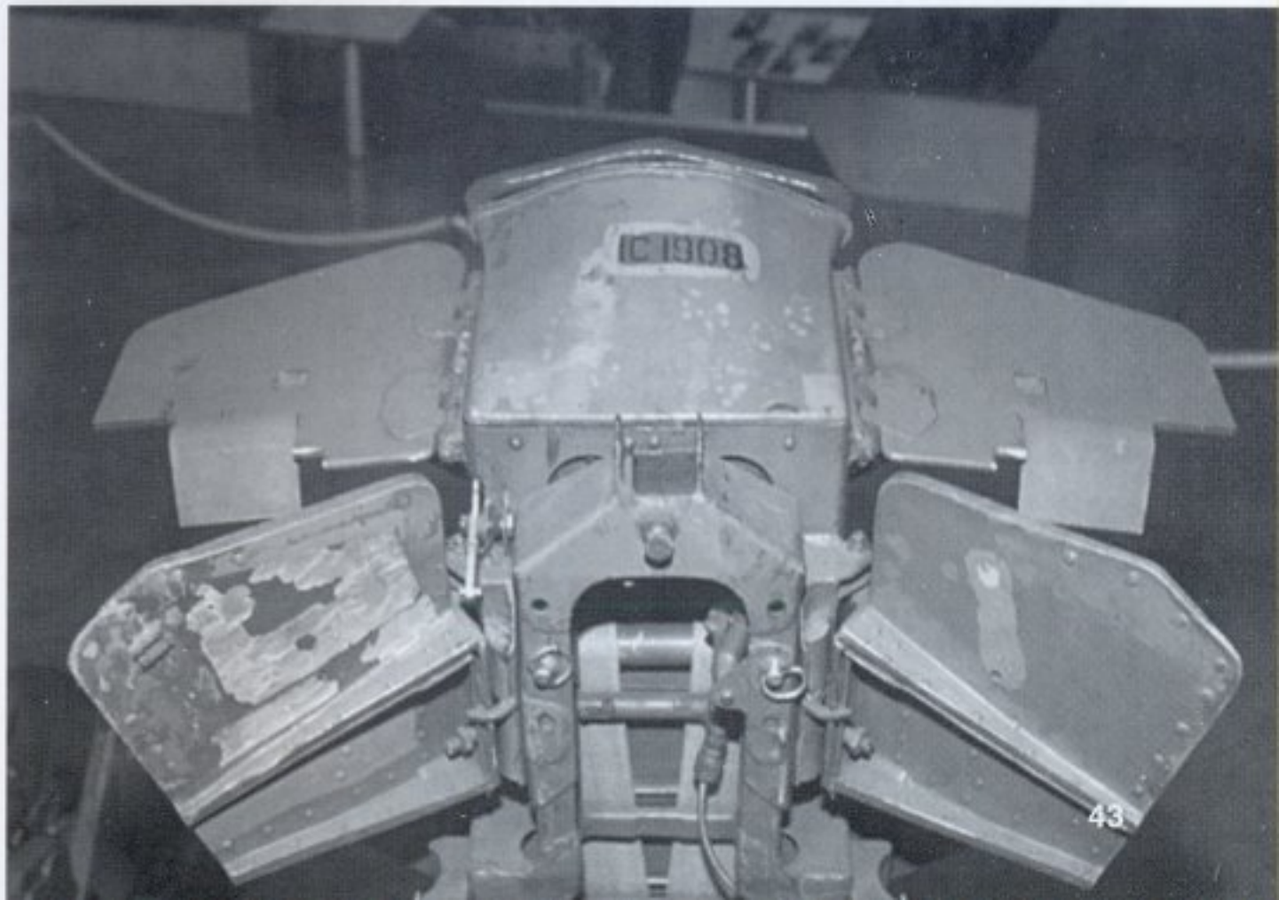


The ejection seat of a Fresco-C. The same type of seat was also installed in late production batches of the Fresco-A. The seat allowed safe ejections at speeds up to 850 km/h (528 mph).



Bottom of the ejection seat viewed from the port side.

The ejection seat's headrest with the stabilizing fins fully deployed, viewed from the rear.



A distinctive feature of the MiG-17F Fresco-C was the access panel on the starboard lower wing surface near the wing root. There was no corresponding panel on the port wing. Both the MiG-15 and the MiG-17 Fresco-A lacked this panel.

Like the late production MiG-15bis, the MiG-17 had a single LFSV-45 landing light mounted in front of the main wheel well on the underside of the port wing.

A T-shaped antenna for the RV-2 radar altimeter was placed in front of the starboard main wheel well. Adjacent to the antenna was a circular access panel. This antenna design was copied from the U.S. Navy's Consolidated PB4Y-2 Privateer.

On the port side of the Fresco-C, the RV-2 antenna was mounted near the wing tip. Adjacent to it was an oval access panel. The same configuration of RV-2 antennas and access panels was seen on the Fresco-A.

Wing tip of a MiG-17F. All versions of the MiG-17 had a position light mounted directly on the leading edge of each wing tip. On the MiG-15 the position light was located in a removable panel attached to the wing tip's leading edge. The wing tip of the MiG-17 was made of two pieces, but the MiG-15 had a one-piece wing tip. Aft of the position light is the *Syrena*-2 button antenna.

All versions of the MiG-17 carried two pitot tubes, one on each wing tip. The MiG-15 had a single pitot tube, located farther inboard on the starboard wing.

This pylon, mounted on the starboard wing of a Polish-built MiG-17F outboard of the drop tank, was a unique modification by the Bulgarian Air Force to the Fresco-C fighter-bombers that equipped its 21st and 27th Fighter Aviation Regiments. Polish and East German fighter-bombers had a pylon mounted closer to the fuselage.

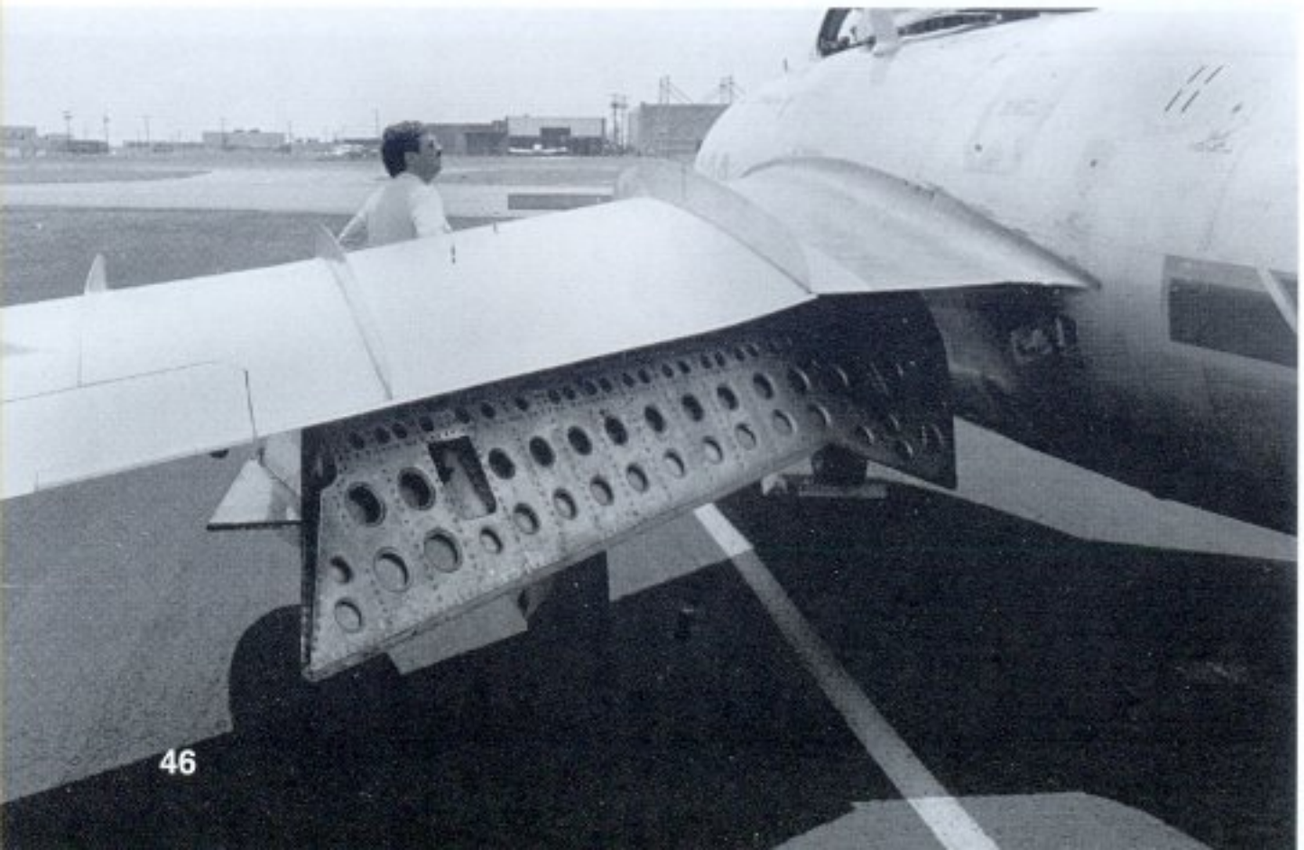
The starboard pylon of a Bulgarian Air Force MiG-17F. The button antenna of the *Syrena*-2 radar homing and warning system is visible on the leading edge of the wing. Only Fresco-Cs of the 21st and 27th Fighter Aviation Regiments were so modified.

This view of East German MiG-17Fs shows the difference between the starboard and the port wings. An aileron trim tab was affixed only to the port aileron, while the compass and its oval access hatch were installed in the starboard wing, outboard of the outboard wing fence.

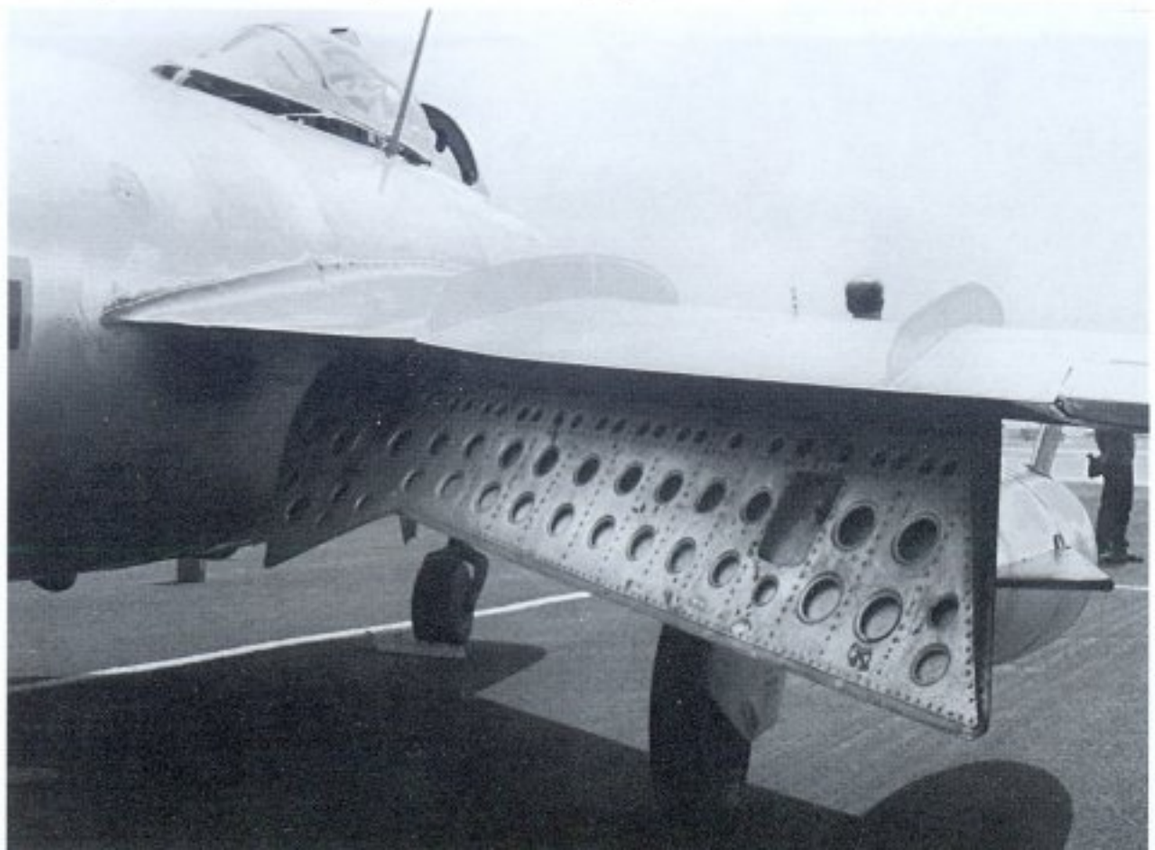
The main landing gear of Soviet- and Polish-built MiG-17F Fresco-Cs had two brake lines attached to each main gear strut.

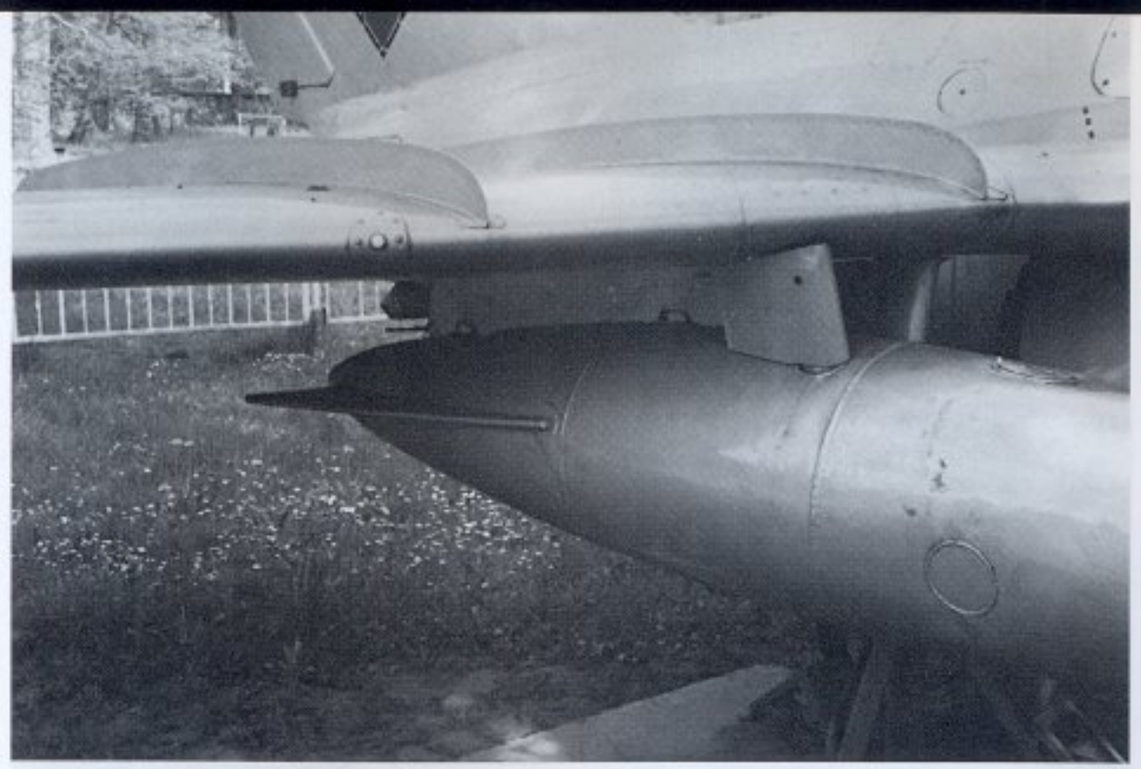
The Shenyang J-5 had only a single brake line.

The fully extended port flap of Shenyang J-5 N1VC. The trim tab on the port aileron is clearly visible. The inner corner of the aileron is beveled, but on the MiG-15 the leading edge of the aileron extended to the outboard edge of the flap.



The fully extended starboard flap of N1VC. Landing flaps of the MiG-17F and the J-5 were identical.

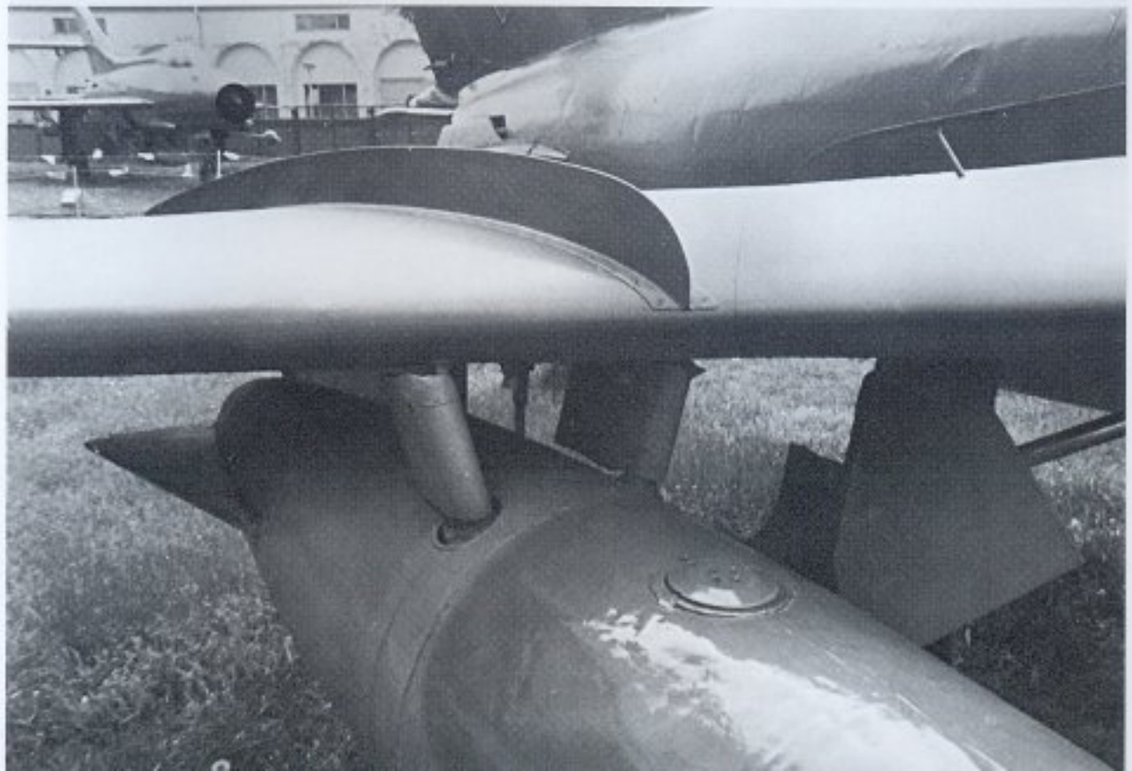




(Above) The aft portion of a PTB-400 underwing fuel tank of MiG-17F "Red 502" (s/n 1C-09-02) of the East German Air Force. This Fresco-C was formerly on permanent exhibit at the Pionier Palast (Pioneer's Palace), Dresden, Germany, where it had been donated to the "Pioniere," the East German youth organization. Today, the aircraft rests at the Airfield Museum at Cottbus, Germany.

(Right) Refueling the PTB-400 drop tank of an East German MiG-17F during an exercise. The high fuel consumption of the VK-1F engine meant that most MiG-17Fs always were operated with two drop tanks. Each tank had a fuel capacity of 400 liters (106 gallons).

(Below) The PTB-400 drop tank was suspended from a D4-50 bomb rack below the center wing fence and could be jettisoned. The rod protruding from the wing between the two wing fences is the mechanical position indicator for the main landing gear.

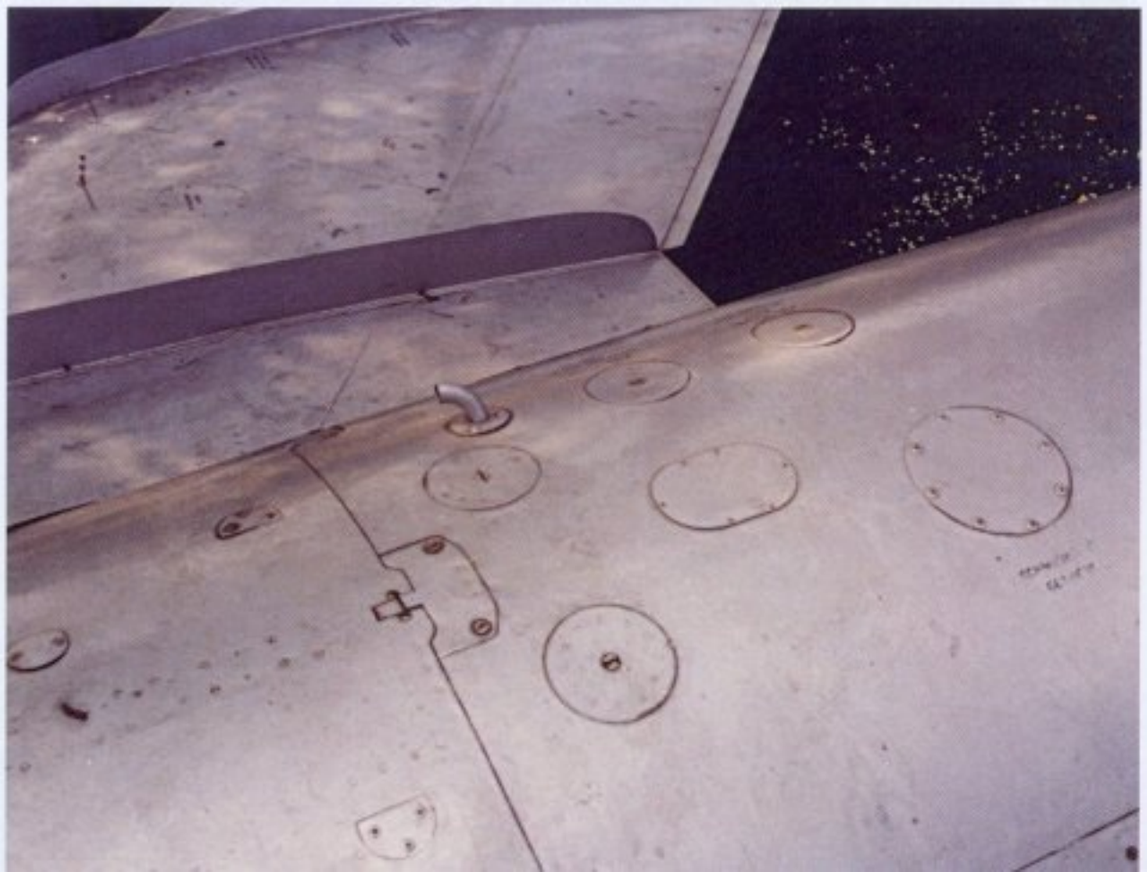


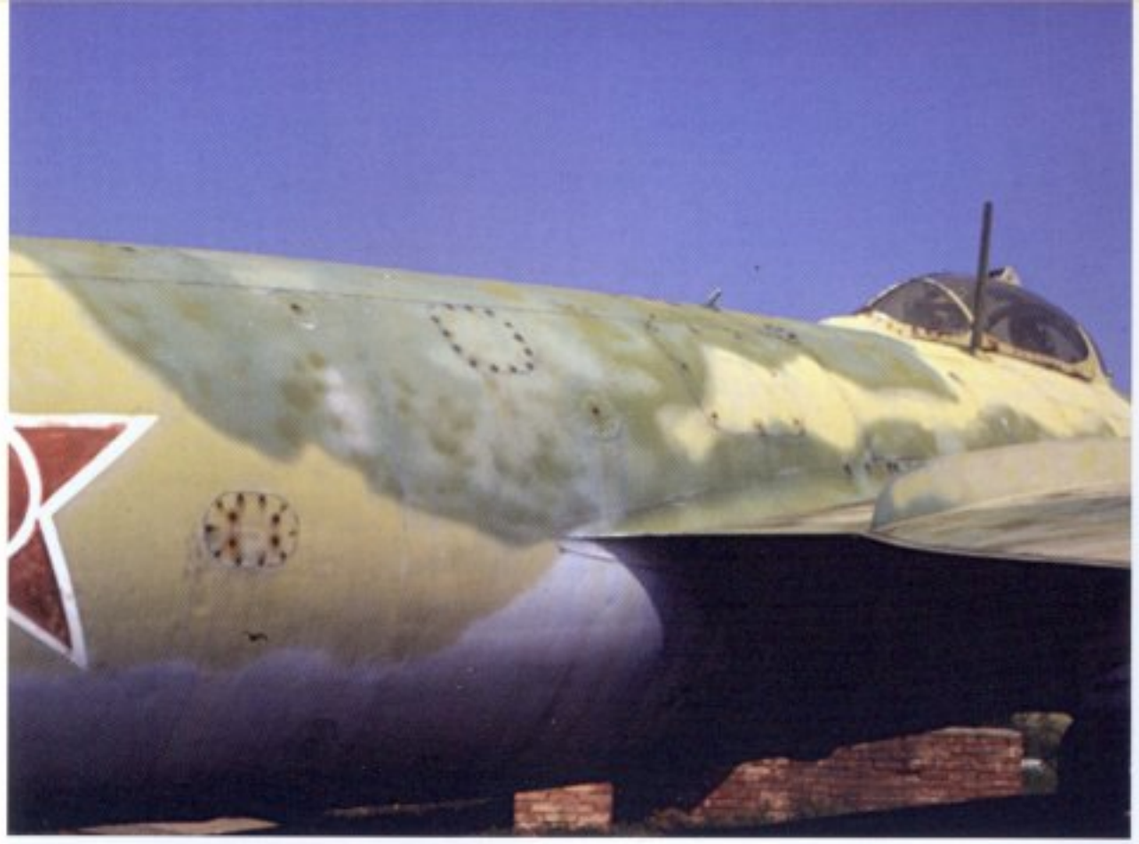
Starboard fuselage of MiG-17F "Black 0872" (s/n 000872) of the Letectvo Ceskoslovenske Lidove Armady (Czechoslovak Air Force). The number and locations of the circular access panels on the starboard fuselage are different from that of the port fuselage. In addition, the Fresco-A and Fresco-C had a different arrangement of access panels on the rear fuselage.

Port rear fuselage of MiG-17F "Black 0782." Unique features of the MiG-17F were the four slots in the small square access panel. The corresponding access panel on the Fresco-A did not have slots. In a very unusual configuration for a MiG-17F, no underwing fuel tanks are fitted.

The rear fuselage of "Black 0782." The Fresco-A had an EKSR-46 flare dispenser in the fuselage where the oval panel is located. On the MiG-17F, the EKSR-46 was relocated to the starboard side of the fin. However, workers on the MiG-17F production lines continued to cut an opening in the fuselage, only to cover it with a panel.

Access hatches on top of the fuselage of MiG-17F "Red 502." The tube offset to starboard is the air pressure probe.



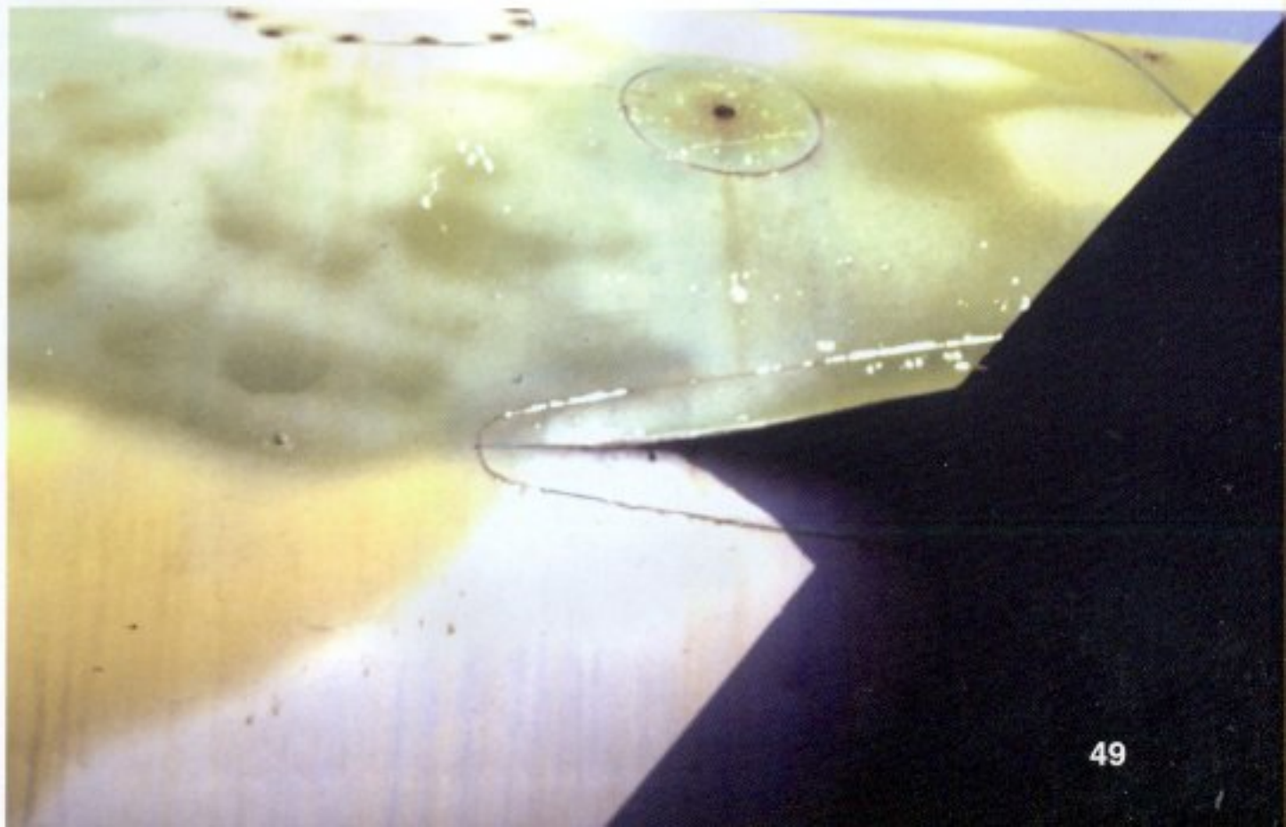


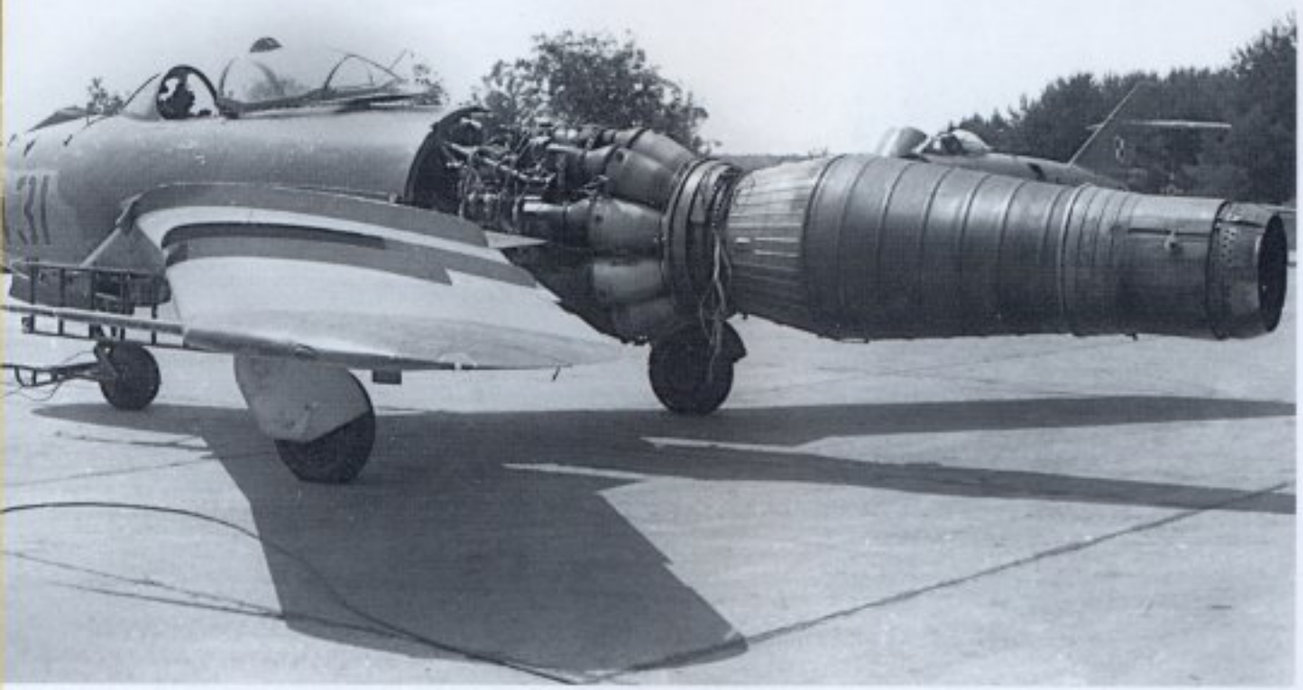
Starboard rear fuselage of a Bulgarian MiG-17F.

Various access panels on the port rear fuselage of the MiG-17. The square panel with the four slots only appeared on the port side.

The external electrical power connection of the MiG-17F was located on the port fuselage below the aft end of the wing root fairing and covered by a small door. Its location is the same as that of the Fresco-A.

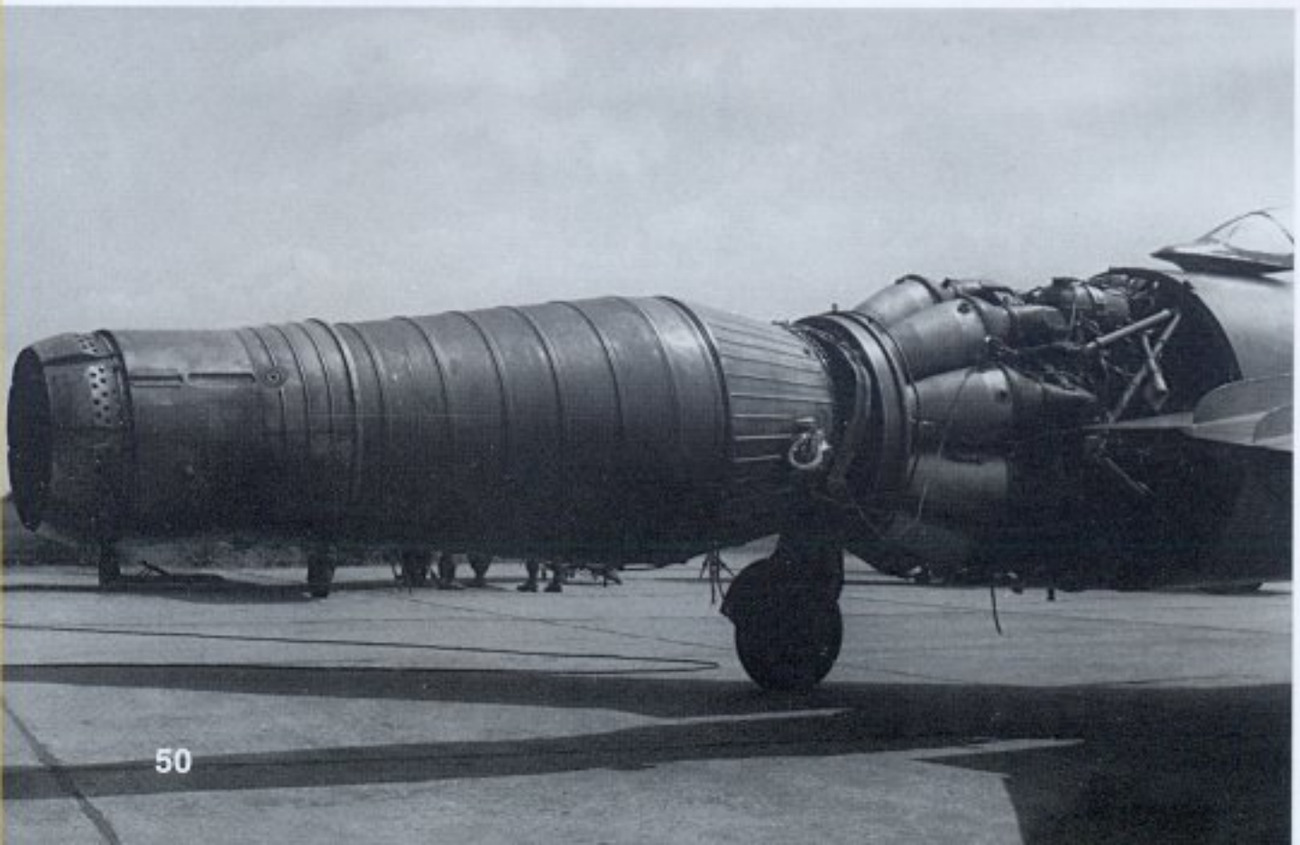
Starboard rear fuselage and the aft end of the starboard wing root fairing.





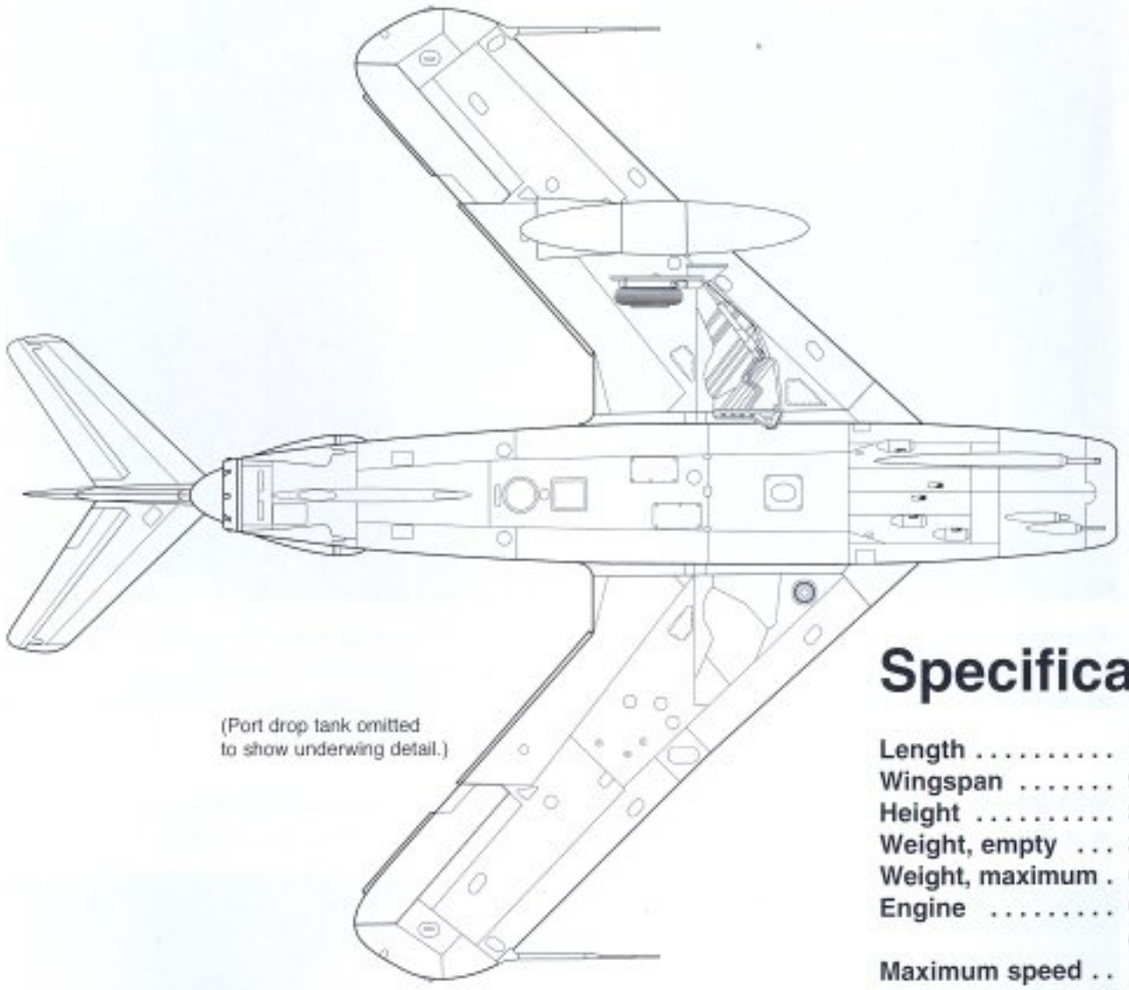
The MiG-17F copied the MiG-15's design for easy access to the VK-1F powerplant. For maintenance purposes, the entire aft fuselage of the aircraft could be removed with the help of a trolley.

The VK-1F engine of the MiG-17F differed from the earlier VK-1 in having an afterburner with an adjustable nozzle. The jet pipe on the VK-1F was conical, but the non-afterburning VK-1 and VK-1A engines had cylindrical jet pipes. The VK-1 powered the MiG-17 Fresco-A as well as the MiG-15bis Fagot-B.

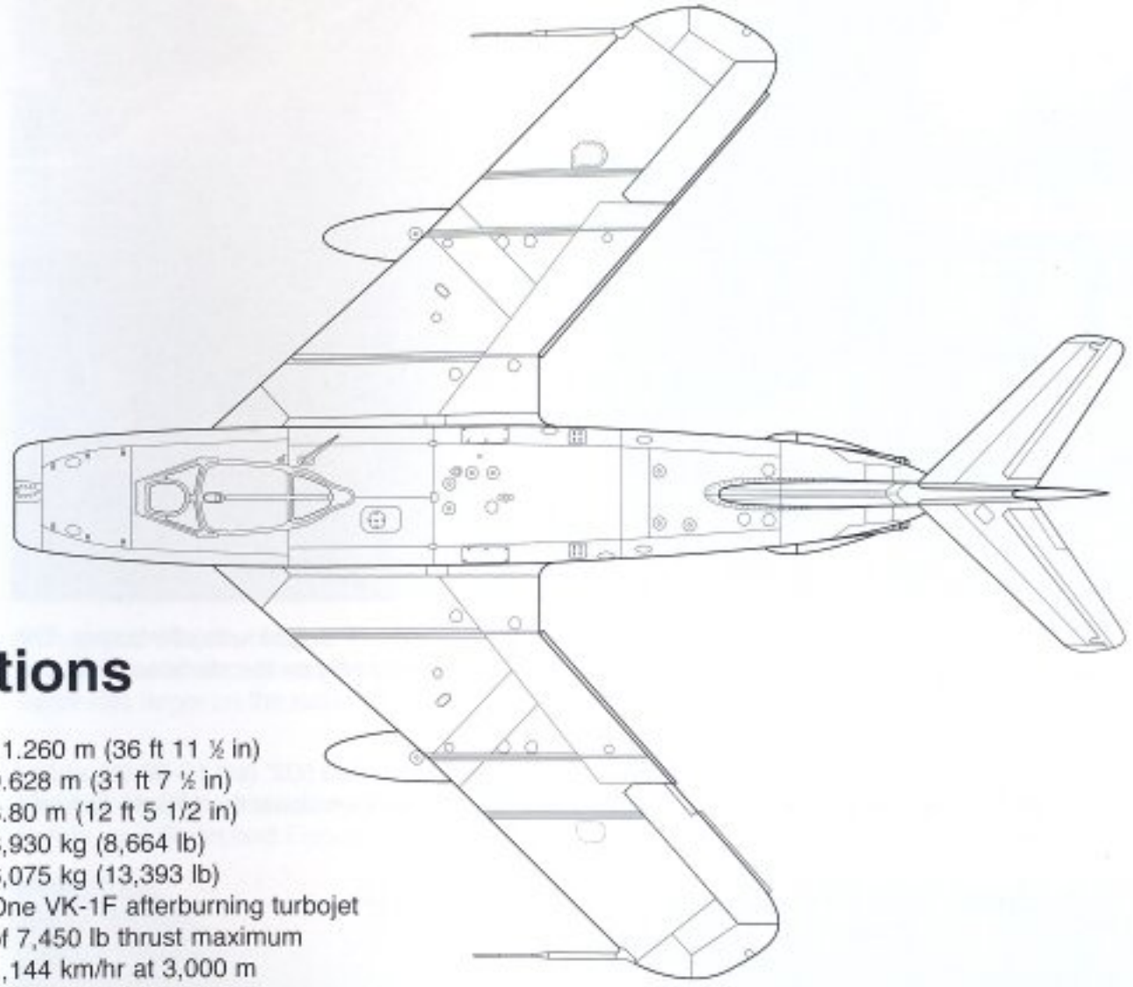


Maintenance on brand-new MiG-17Fs of Jagdfliegergeschwader 1 (1st Fighter Aviation Regiment) "Fritz Schmenkel" of the East German Air Force at Cottbus. The Fresco-Cs carry the early national markings applied between 1956 and autumn 1959. The pitot tubes on the wing tips of the nearest aircraft have been covered. The last MiG-17F in the row, "Red 905" (s/n 1C-08-20), is now part of the aviation museum at Berlin-Gatow.

MiG-17F Fresco-C

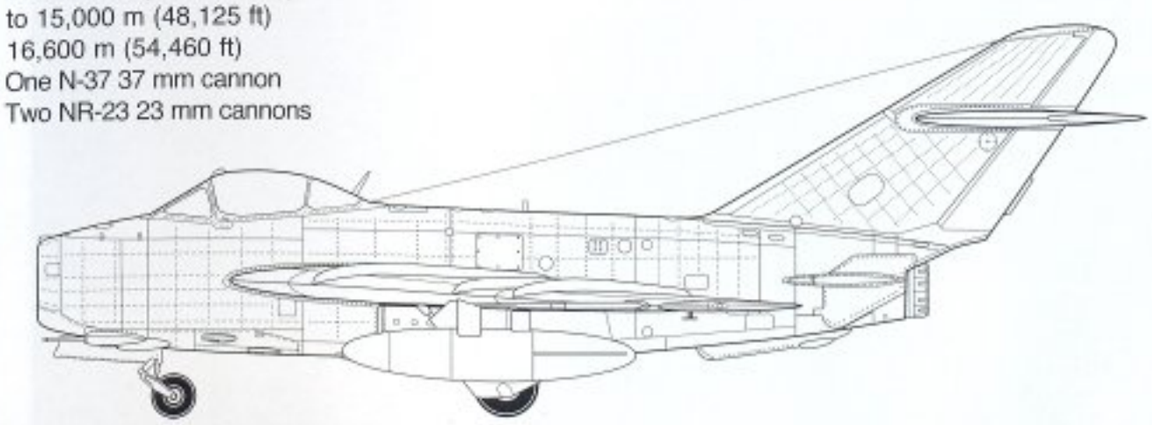


(Port drop tank omitted to show underwing detail.)



Specifications

Length ..... 11.260 m (36 ft 11 ½ in)
Wingspan ..... 9.628 m (31 ft 7 ½ in)
Height ..... 3.80 m (12 ft 5 1/2 in)
Weight, empty ... 3,930 kg (8,664 lb)
Weight, maximum . 6,075 kg (13,393 lb)
Engine ..... One VK-1F afterburning turbojet of 7,450 lb thrust maximum
Maximum speed .. 1,144 km/hr at 3,000 m (711 mph at 9,480 ft)
Fuel ..... 1,415 l (374 gal) internal plus Two 400-l (88 gal) external tanks
Range ..... 1,980 km (1,230 mi) maximum
Rate of climb .... 33.8 m/sec (6,503 ft/min) to 15,000 m (48,125 ft)
Service ceiling ... 16,600 m (54,460 ft)
Armament ..... One N-37 37 mm cannon Two NR-23 23 mm cannons



The MiG-17F received a redesigned tail to accommodate the VK-1F engine with afterburner. The rectangular access panel in the fairing above the nozzle appeared only on the starboard side.

The airbrakes of MiG-17F "Black 0872." Air brakes of the Fresco-C were considerably enlarged, compared with those of the Fresco-A, and the fairings covering the air brake actuators were enlarged as well. An oval access panel was located on the port side of the fairing above the engine nozzle.

A jack has been used to stabilize the tail of East German MiG-17F "Red 502" (s/n 1C-09-02) while it undergoes repair. The ventral fin is a unique feature of all MiG-17 versions; the MiG-15 lacked a ventral fin, having only a bumper.

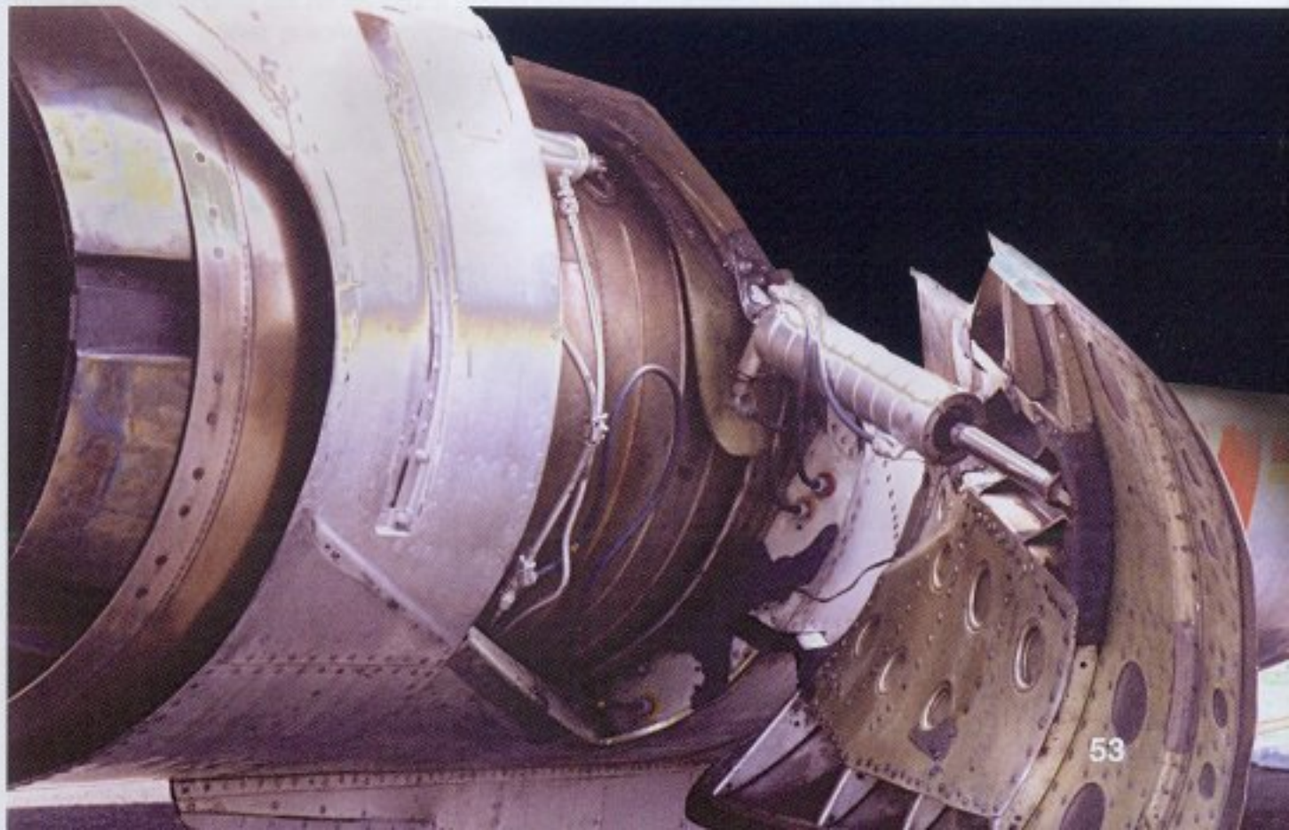
Ventral fin of a Bulgarian Air Force MiG-17F Fresco-C. On the Fresco-A, the square access panel was located much closer to the air brake than on the Fresco-C.

Vertical fin of MiG-17F "Red 300" (s/n 1C-06-30). An EKSR-46 flare dispenser was installed in the forward portion of the fin of the Fresco-C on the starboard side. The Fresco-A carried its EKSR-46 on the starboard rear fuselage. On the Fresco-D, the device was relocated to a lower position on the starboard side of the fin. All MiG-17 versions carried a single EKSR-46 flare dispenser.

Port side of the tail of MiG-17F "Red 502." The oval access panel to the left of the national marking and the circular access panel close to the rudder appeared only on the port side. This oval access panel was larger on the radar equipped MiG-17PF Fresco-D.

The partially extended air brake of an East German MiG-17F Fresco-C.

The fully deployed starboard air brake of a Shenyang J-5 (s/n 2705). The airbrakes of Chinese-, Polish-, and Soviet-built Fresco-Cs were identical.



"Red 1426," a very late production Lim-5 (s/n 1C-14-26), was built in November 1958 and has some very unusual features not standard on late-production Fresco-Cs. Like the late-production MiG-15bis and early MiG-17F, it has a wire radio antenna leading from the tip of the vertical fin to a small mast on the starboard fuselage just below the canopy. Also unusual for a late-production Lim-5 is the small pitot tube just above the tactical number and the absence of an SRD-1 *Radal* radar rangefinder antenna.

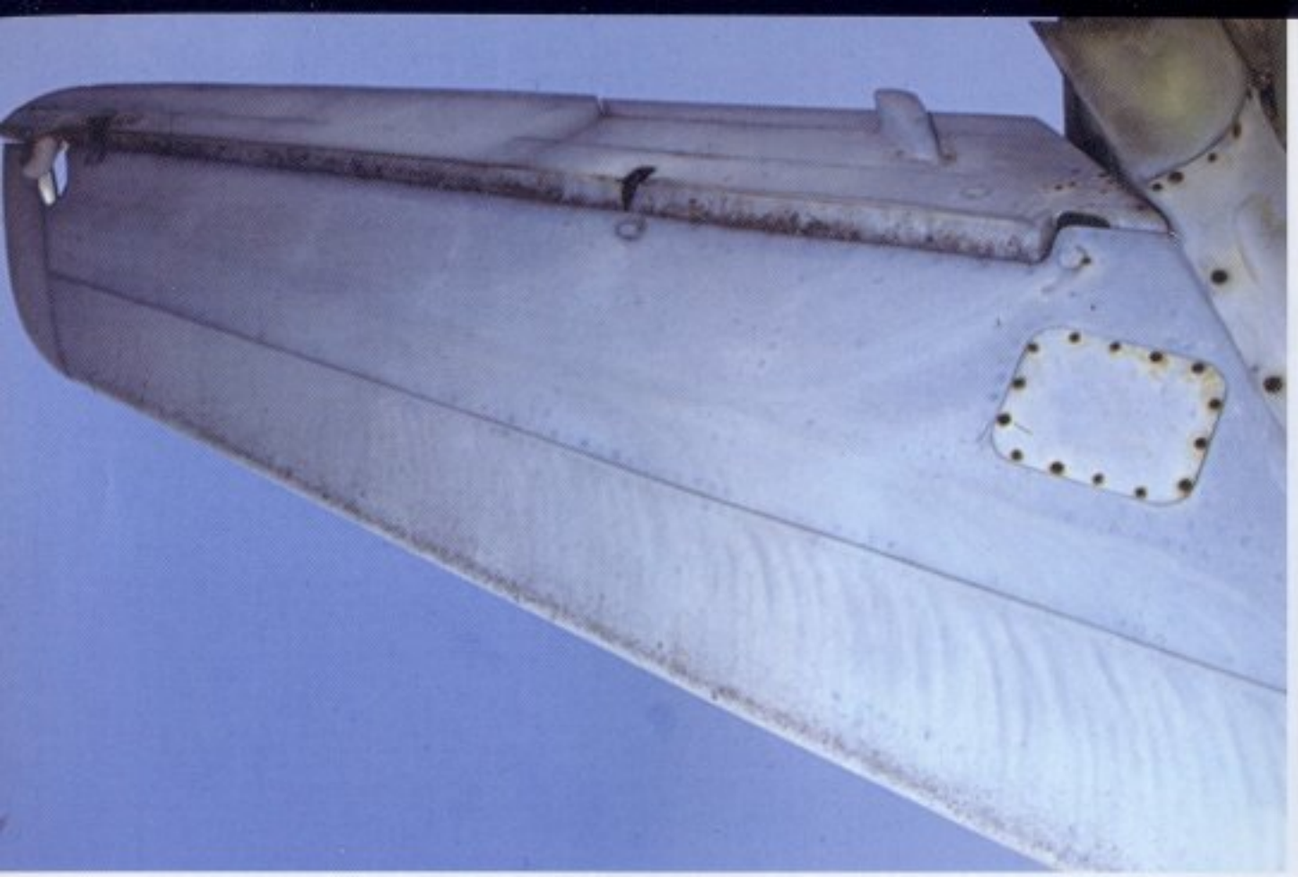
"Red 38," an early production MiG-17F of the Bulgarski Voyenno Vozdushni Sili (Bulgarian Air Force) still has a small pitot tube located above the tactical number, but the dorsal blade antenna, typical of early production MiG-17Fs, has been deleted. During the course of its operational service, this particular MiG-17F was retrofitted with *Syrena*-2 button antennas on the wing tip and the wing leading edges. The last Bulgarian MiG-17s were withdrawn from service in 1988.

This lineup of East German Air Force MiG-17F Fresco-Cs and a MiG-15UTI trainer illustrates the different tail configurations of both types. The second aircraft in line is the MiG-15UTI; all other aircraft are MiG-17Fs. The MiGs carry the East German national markings used between 1956 and autumn 1959.

East German ground crewmen in their L-2 chemical warfare protection suits refuel the starboard PTB-400 drop tank of a MiG-17F. The position of the EKSR-46 flare dispenser in the vertical fin clearly identifies this aircraft as a Fresco-C.

Maintenance on Polish Air Force Lim-5s. All Fresco-Cs and Lim-5s received an aft antenna for the *Syrena*-2 radar homing and warning system, installed below the position light on the tail. Most Fresco-As and all Shenyang J-5s lacked this component when they left the production line. A number of Soviet-built Fresco-As were subsequently retrofitted with the antenna, so it is not a feature that distinguishes a Fresco-C from a Fresco-A.

"Red 456," an early MiG-17F (s/n 1C-06-10) of Jagdfliegergeschwader 1 (1st Fighter Aviation Regiment) "Fritz Schmenkel," is towed to its hardstand at Cottbus Air Force Base. The other Fresco-Cs are covered with canvas, a common protective measure when no hangar or shelter was available. "Red 456" was a Polish-manufactured Fresco-C delivered to the East German Air Force in July 1957.

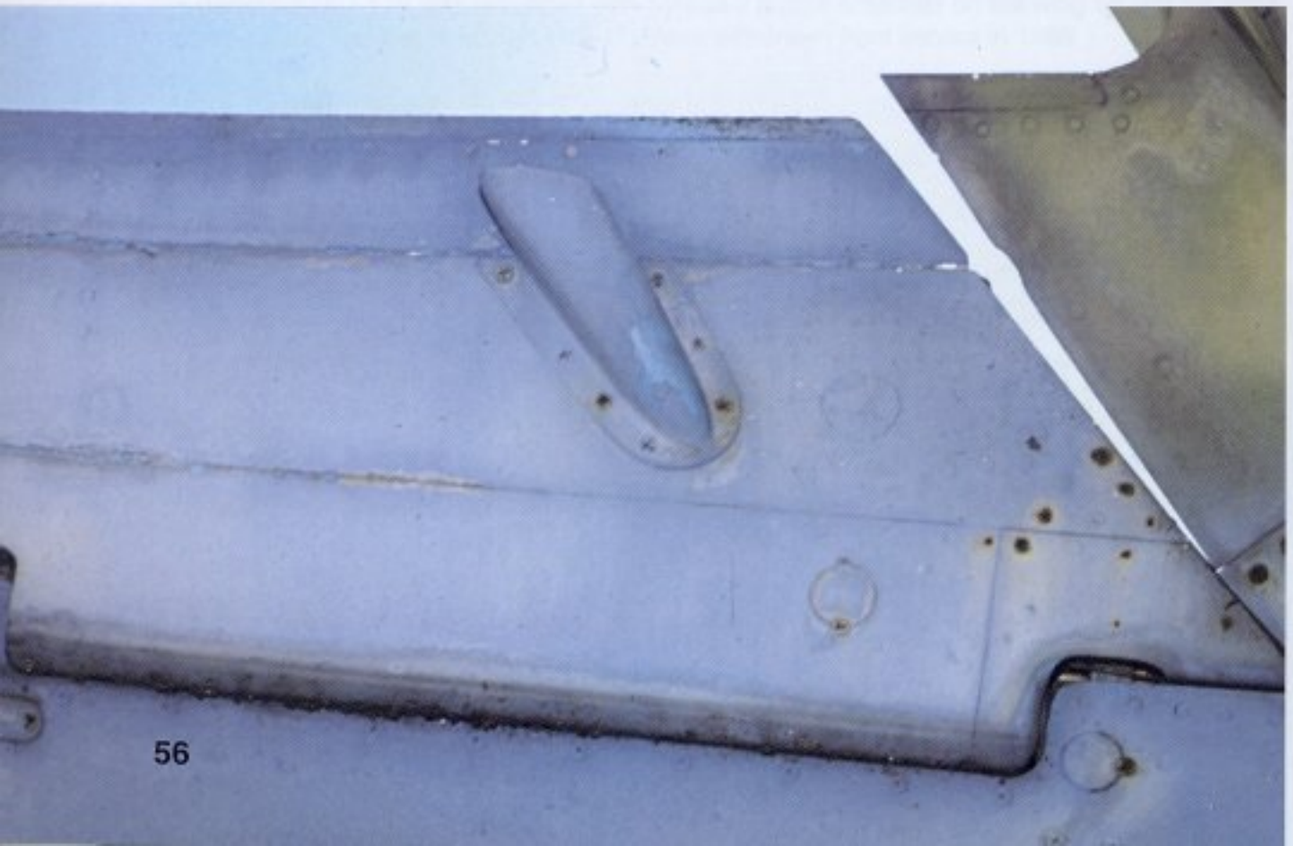


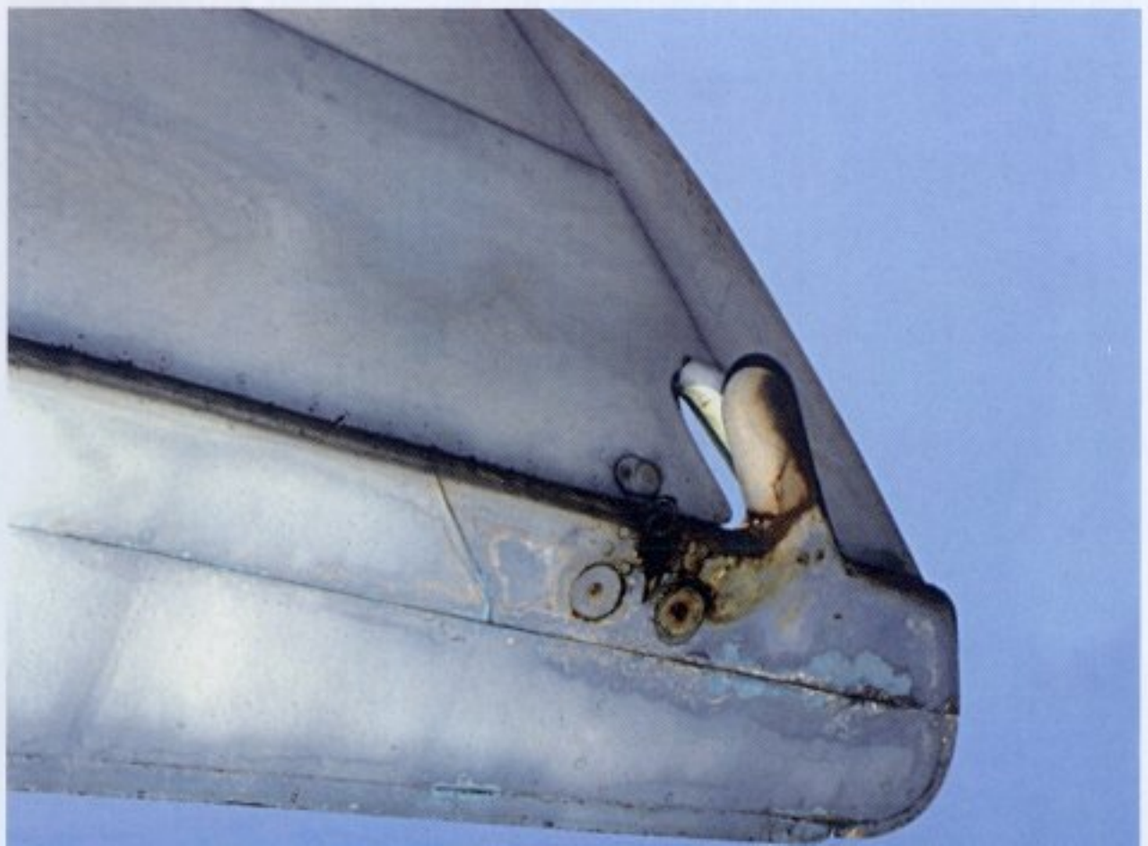
Underside of the port horizontal stabilizer of a MiG-17F. The elevator trim tab and square access hatch appeared only on the port stabilizer of the Fresco-C.

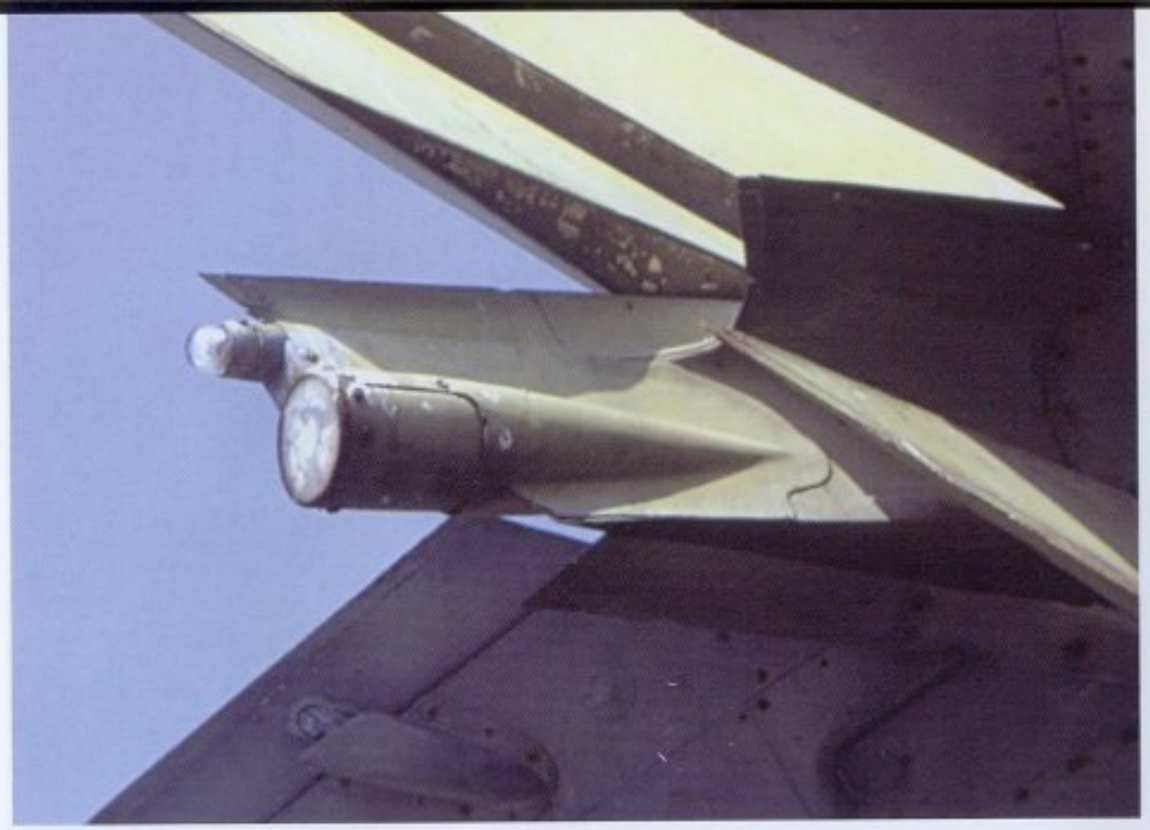
The starboard horizontal stabilizer of the MiG-17F lacked an elevator trim tab and an access hatch. Just visible at top left are the antenna for the *Syrena*-2 radar homing and warning system and aft position light, both mounted below the top portion of the rudder.

The elevator trim tab and fairing covering its actuator. Each elevator of the MiG-17 had an "L"-shaped notch at the inboard end of its leading edge. On the MiG-15, the elevator's leading edge was straight.

Tip of the starboard horizontal stabilizer and elevator of a MiG-17F. On the MiG-17, mass balance weights extended from the leading edges of the elevators inboard of their tips. The MiG-17's rudder had a similar balance weight near its tip.







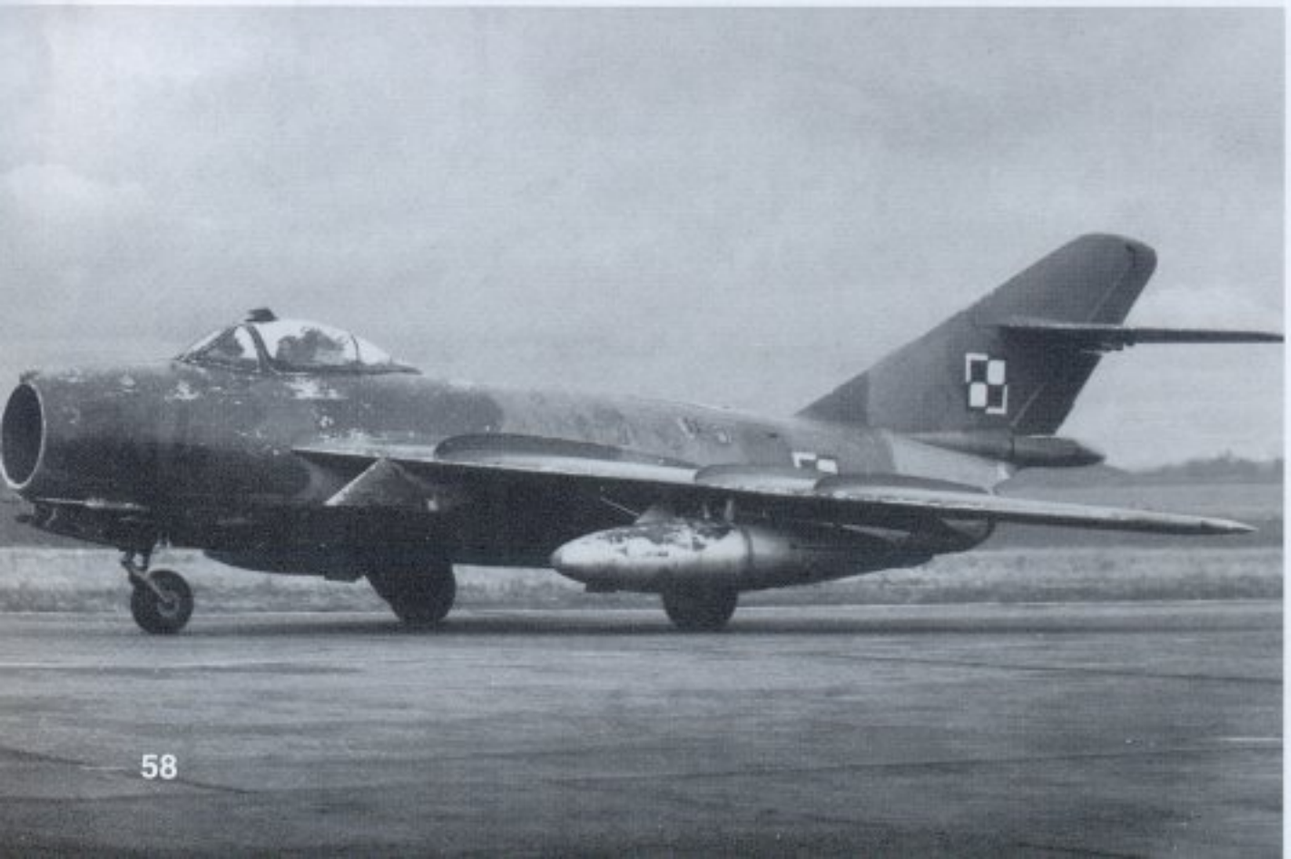
An aft-facing antenna for the *Syrena*-2 radar homing and warning system was fitted to the tail fin of all MiG-17F Fresco-Cs below the aft position light. The aft position light of the MiG-15 was mounted on a bullet-shaped fairing, but on all MiG-17s the position light was attached to the trailing edge of the vertical fin.

The aft *Syrena*-2 antenna seen from left and below. MiG-15s never had a *Syrena*-2 antenna in this location. Chinese-built Shenyang J-5s and F-5s also lacked this antenna, as did the radar-equipped MiG-17PF Fresco-Ds.

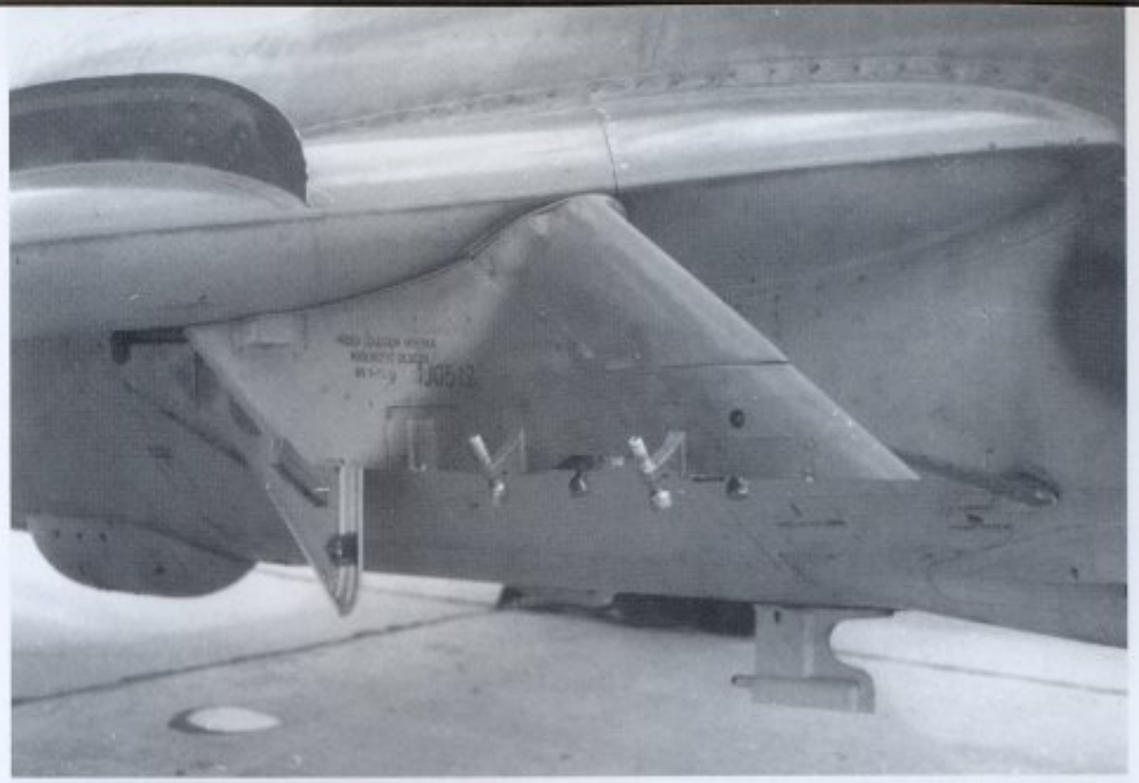
Vertical fin of a Letectvo Ceskoslovenske Lidove Armady (Czechoslovak Air Force) MiG-17 Fresco-C (s/n 000872). A feature of all MiG-17 versions was an adjustable trim tab on the lower portion of the rudder. The MiG-15 had only a ground-adjustable trim tab.

This East German MiG-17F, "Red 210" (s/n 1C-08-22), has been converted to a fighter-bomber. The Fresco-C is equipped with two wing pylons, each carrying two MARS-2 rocket pods. It still carries the SRD-1M radar rangefinder antenna on the nose. This particular MiG-17F was sold to Mozambique in August 1981.

"Red 414," a weathered Lim-6bis (s/n 1J-04-14). A unique feature of the Lim-6bis was the SH-19 drag chute container in an extended fairing at the base of the rudder. This particular Lim-6bis does not carry a MARS-2 rocket pod.



These Lim-6bis fighter-bombers were all manufactured as new, not converted from other airframes. Initially, the Polish Lim-6bis were operated in natural metal. All the aircraft in this line-up carry an SRD-1M radar rangefinder antenna, which was subsequently deleted from most aircraft.



The starboard underwing pylon of the Lim-6bis could accommodate a MARS-2 rocket pod or a variety of bombs up to a weight of 250 kg (551 lb). The shoe-shaped object under the fuselage is an RV-UM radar altimeter antenna, which replaced the T-shaped antenna under the wings of the fighter-bomber version of the Fresco-C. On the left, the fairing for an AFA-39 camera is visible on this particular Lim-6bis R, "Red 512" (s/n 1J-05-12).

For reloading purposes, the rear portion of the MARS-2 rocket pod could be removed. A total of sixteen S-5 unguided rockets could be carried in each pod. The S-5 had a caliber of 57 mm (2.16 in) and weighed 3.8 kg (8.4 lb). The stenciling "1J-05-27" on the MARS-2 pod indicates that it had been borrowed from another aircraft. This particular Lim-6R, "Red 505," (s/n 1J-05-05) was sold in the United States in February 1994 and is currently registered as N505MG.

The primary difference between the East German MiG-17F fighter-bomber and the Polish Lim-6bis was the extended drag chute housing of the latter. This is a Lim-6bis R, "Red 630" (s/n 1J-06-30).

The reconnaissance version of the Lim-6bis, the Lim-6bis R, was equipped with an AFA-39 camera housed in a fairing on the starboard rear fuselage. At left is the shoe-shaped antenna of the RV-UM radar altimeter.

Lim-6bis "Red 303" (s/n 1F-03-03) served with the 48th Fighter Bomber Regiment at Babimost Air Force Base. Its tactical number has a thin yellow outline, and it carries a silver PTB-400 400-liter drop tank.

Lim-6bis "Red 101" (s/n 1F-01-01) served with the 45th Fighter Bomber Regiment at Babimost Air Force Base. The tip of its vertical fin is red.

"Red 513," a MiG-17F (s/n 1C-09-13) which has been converted for ground attack missions. Unlike most such conversions, it still carries an SRD-1M radar rangefinder. The Fresco-C originally served with Jagdfliegergeschwader 7 (7th Fighter Aviation Regiment) at Drewitz, German Democratic Republic. After conversion, it was allocated to Jagdbombenfliegergeschwader 31 (31st Fighter-Bomber Aviation Regiment) but retained its original tactical number. It was phased out of service at the end of 1984 and subsequently scrapped.

MiG-17F "Red 346" (s/n 1C-07-23) shows off the ammunition for its 23 mm and 27 mm cannons as well as the S-5 57 mm unguided rockets carried in its MARS-2 pods. With its rocket pods and drop tanks removed, the MiG-17 could carry four bombs. "Red 346" has been awarded the "Flugzeug der ausgezeichneten Qualität" ("airplane of excellent quality") badge given to well-maintained combat aircraft.

The starboard MARS-2 rocket pod of East German MiG-17F "Red 300" (s/n 1C-06-30). The aircraft's tactical number has been applied to the pylon as well as to the pod. This particular Fresco-C entered service with the East German Air Force in August 1957

Port MARS-2 rocket pod of "Red 300." A small triangular fairing on the forward upper end of the pod matched the lower forward end of the pylon.

The starboard MARS-2 pod and pylon of "Red 300." The MARS-2 was attached to the pylon with a D4-50 bomb rack.

A strut connected each MARS-2 pylon to the fuselage. This modification was necessary because of the structural loads imposed in high-g maneuvers. With the MARS-2 pod on the wing, it was still possible for the aircraft to carry external fuel tanks.

(Above) "Blue 09," a *VVS* MiG-17PF, was an early variant of the Fresco-D, with a wire radio antenna running from tip of tail to near the cockpit. Only a few MiG-17PFs had this antenna configuration. The small radome in the air intake splitter is for an RP-1 *Izumrud*-1 (NATO designation "Scan Can") radar system. The majority of Fresco-Ds had two small gun blast panels.

(Left) "Red 514," a Polish-built Lim-5P (s/n 1D-05-14), represents the late version of the Fresco-D. The enlarged radome in the air intake splitter is standard for MiG-17PFs equipped with the RP-5 *Izumrud*-2 (NATO designation "Scan Odd") radar. Late production Fresco-Ds had a large one-piece gun blast panel. On a number of late MiG-17PFs (Lim-5P), the tow rope eyes in the lower part of the air intake splitter were covered.

"Red 643," an East German MiG-17PF (s/n 1D-02-09), taxis on the apron during a winter exercise. The aircraft has the enlarged radome of the RP-5 radar in the air intake splitter. Both radomes are light blue. Installation of the RP-5 "Scan Odd" radar caused the S-13 gun camera to be relocated to a fairing mounted on the starboard nose. The Fresco-D had a more steeply raked windshield than did the MiG-17F. All Fresco-Ds had a rear-view mirror on top of the canopy.

East German MiG-17PF "Red 685" (s/n 1D-02-07). In contrast to the MiG-17F, all MiG-17PFs retained a small pitot tube on the starboard side of the nose. A circular access hatch was added on the starboard side of the nose access panel. Both radomes are dark green. "Red 685" was struck off charge after an accident on 11 August 1964.

The armament platform of "Red 933," an early production Hungarian Air Force MiG-17PF, has been lowered for servicing. The upper radome is dark green, while the RP-1 radome in the air intake splitter is white. This particular Fresco-D has a dorsal blade antenna for an SRO-1 IFF transponder. Most MiG-17PFs carried this antenna on the starboard nose above the cannon fairing.

The nose of a Bulgarian Air Force MiG-17PF. This particular aircraft has two small air intake covers, one on each side of the splitter. Most MiG-17PFs had one large air intake cover. The small radome on the air intake splitter houses the ranging unit of the RP-1 *Izumrud*-1 "Scan Can" radar.

The Fresco-D had a larger upper nose access panel than the MiG-17F. In contrast to the MiG-17F, the MiG-17PF never carried an SRD-1 *Radal* radar rangefinder antenna on the nose panel. MiG-17PF s/n 1D-02-12 once flew as "Red 437" with the East German Air Force. For security reasons, the false tactical number "Red 850" was applied when the Fresco-D was exhibited at the Armee Museum (Army Museum) at Dresden.

On all MiG-17PFs, the S-13 gun camera was relocated to the starboard side of the nose. Daylight fighter versions of the MiG-17, like the MiG-15, had an S-13 gun camera affixed to the top of the air intake.

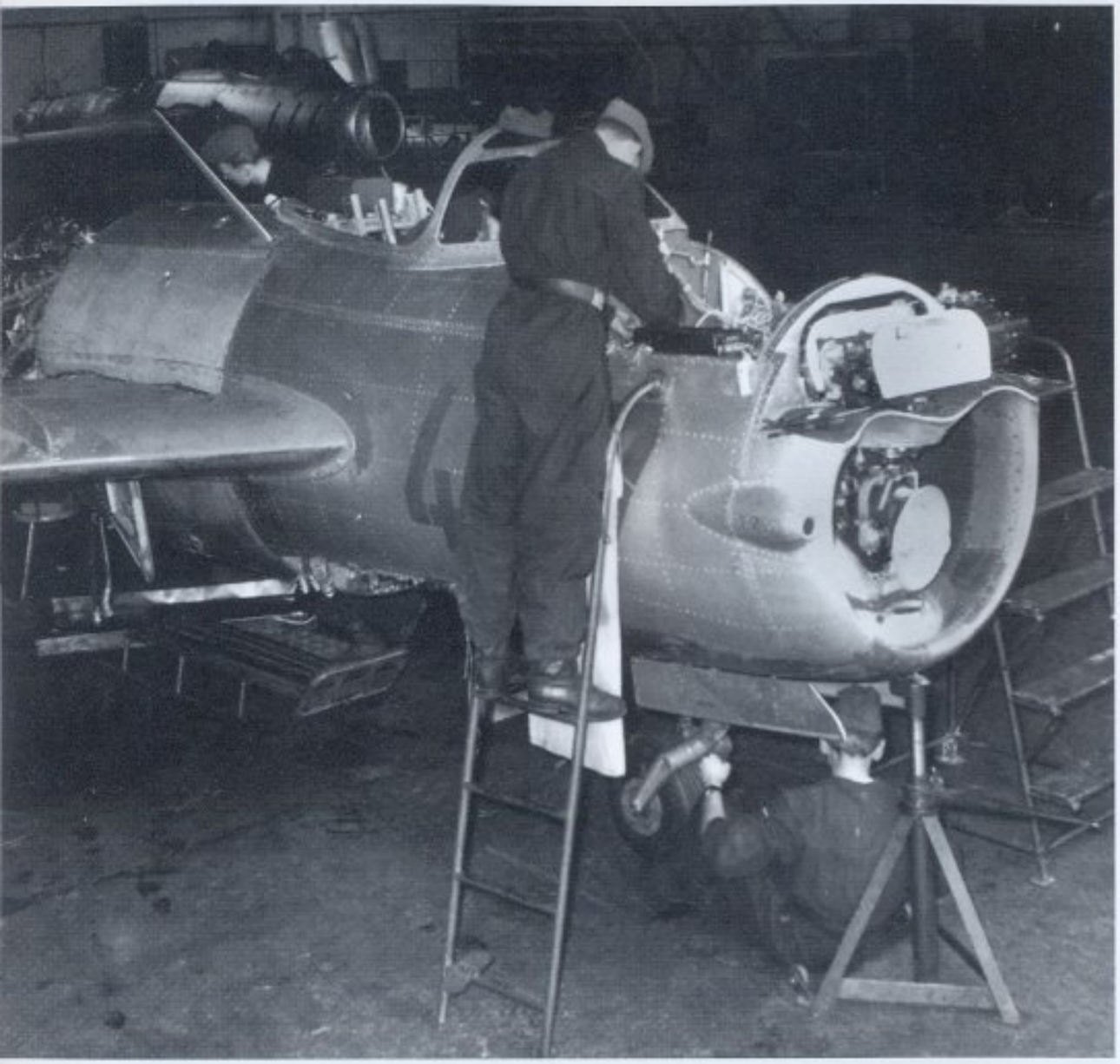
Due to introduction of the *Izumrud* system, the entire nose section of the MiG-17PF had to be redesigned to accommodate the search and track radars. The enlarged radome on the air intake splitter housed the narrow-beam tracking scanner of the RP-5 *Izumrud*-2 "Scan Odd" radar. The majority of MiG-17PFs had two circular eyes for a tow rope on the lower air intake splitter. On some MiG-17PFs these openings were covered.

Instead of an N-37 cannon like the MiG-17F, the MiG-17PF had an NR-23 cannon mounted to starboard in a much smaller fairing. Most Fresco-Ds had a blade antenna for the SRO-1 IFF transponder installed slightly above the starboard NR-23 cannon fairing.

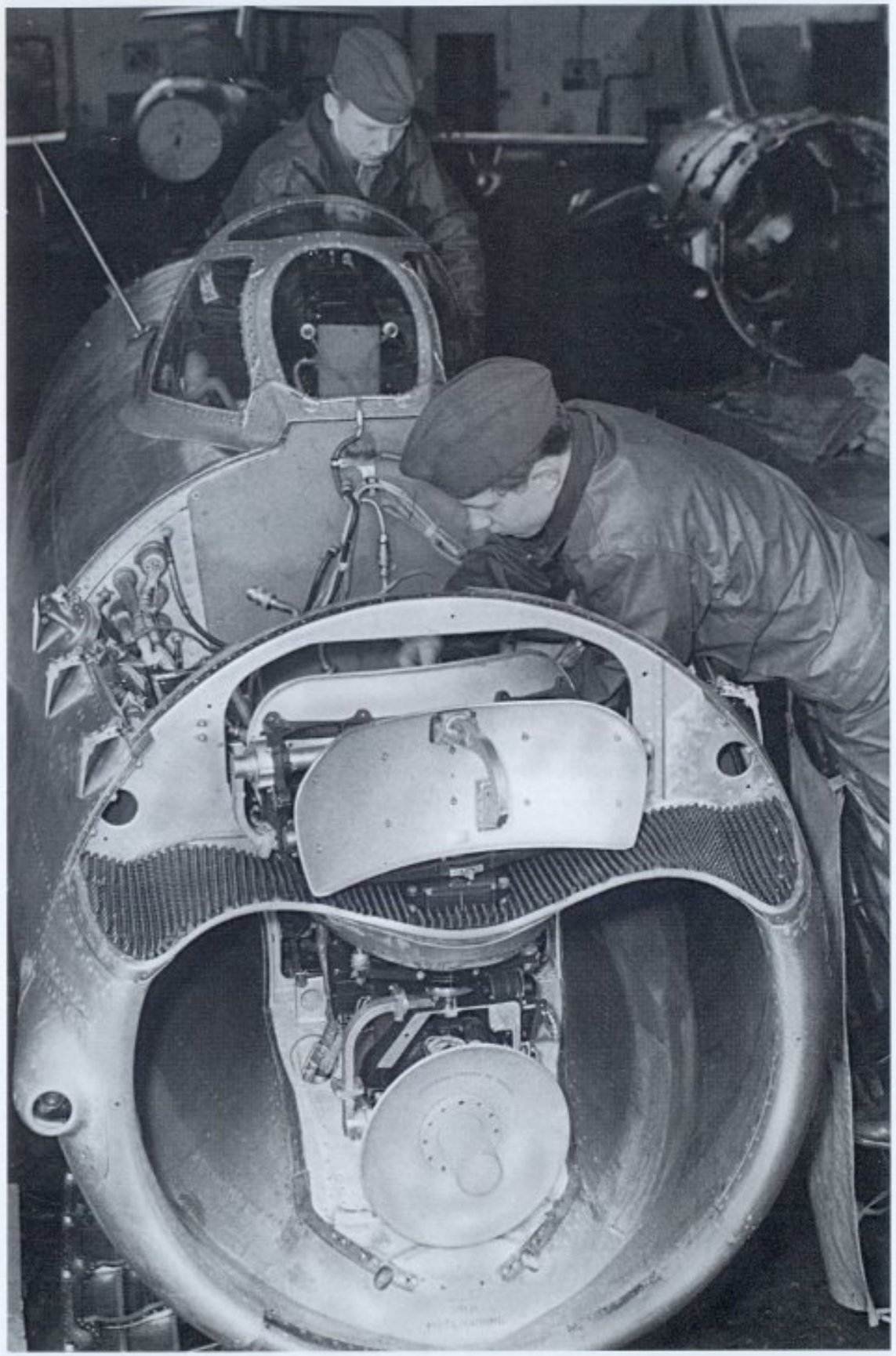
The two NR-23 cannons of the Fresco-D, located on the lower port side of the nose. The elliptical gun port behind the lower barrel is longer than that of the MiG-17F. The Fresco-C also lacked a gun port behind the barrel of its upper NR-23 cannon.

Most MiG-17PFs were equipped with two blast panels behind the muzzles of their 23 mm cannons. The small oval immediately forward of the nose wheel well covers the nose jacking point.

The two NR-23 cannons on the port side of a MiG-17PF. The elliptical ports behind the barrels are a standard feature of the Fresco-D.



(Above) Maintenance on a jacked-up East German MiG-17PF. The rear canopy and ejection seat have been removed, so that only the two rails for the seat remain in the cockpit. Both radomes for the search and track radar have been removed. Because the MiG-17PF never carried a radar rangefinder antenna on the upper nose access panel, this particular panel was completely removable from the aircraft. On the MiG-17F, this panel was attached to the fuselage by two hinges.



(Right) The removed radomes of this East German MiG-17PF reveal the rectangular antenna of the AR-18-16 search radar and the circular antenna of the AR-18-01 track radar. All "black boxes" containing the aircraft's avionics have been removed from the nose bay. Of interest is the tufted covering of the floor of the upper radar compartment. The *Izumrud* ("emerald") radar system was able to search for targets out to a range of 12 kilometers (7.5 miles). The range of the track radar was limited to 3,000 meters (1.8 miles). Both antennas were driven by an AR-18-9 electric motor. The RP-5 *Izumrud*-2 (NATO designation "Scan Odd") radar required a more powerful GSR-6000 generator than the standard GSR-3000 generator of the MiG-17F Fresco-C.

(Above) Maintenance on *VVS* (Soviet Air Force) MiG-17PFs during a bitter cold winter day. Canopies and pitot tubes have been covered. "Blue 10" has a wire radio antenna, while the MiG-17PF behind does not. The two-digit tactical number has a thin black outline.

(Right) North Korean ground crewmen pose for a propaganda photo in front of MiG-17PF "Red 209." The upper nose access panel has been removed, and the cannon platform has been lowered. Although the Fresco-D is clearly not ready for a mission, the pilot, on the starboard wing, appears to have begun his pre-flight check. North Korea received its first Soviet-built Fresco-Ds in 1958, and some were still operational into the 1990s.

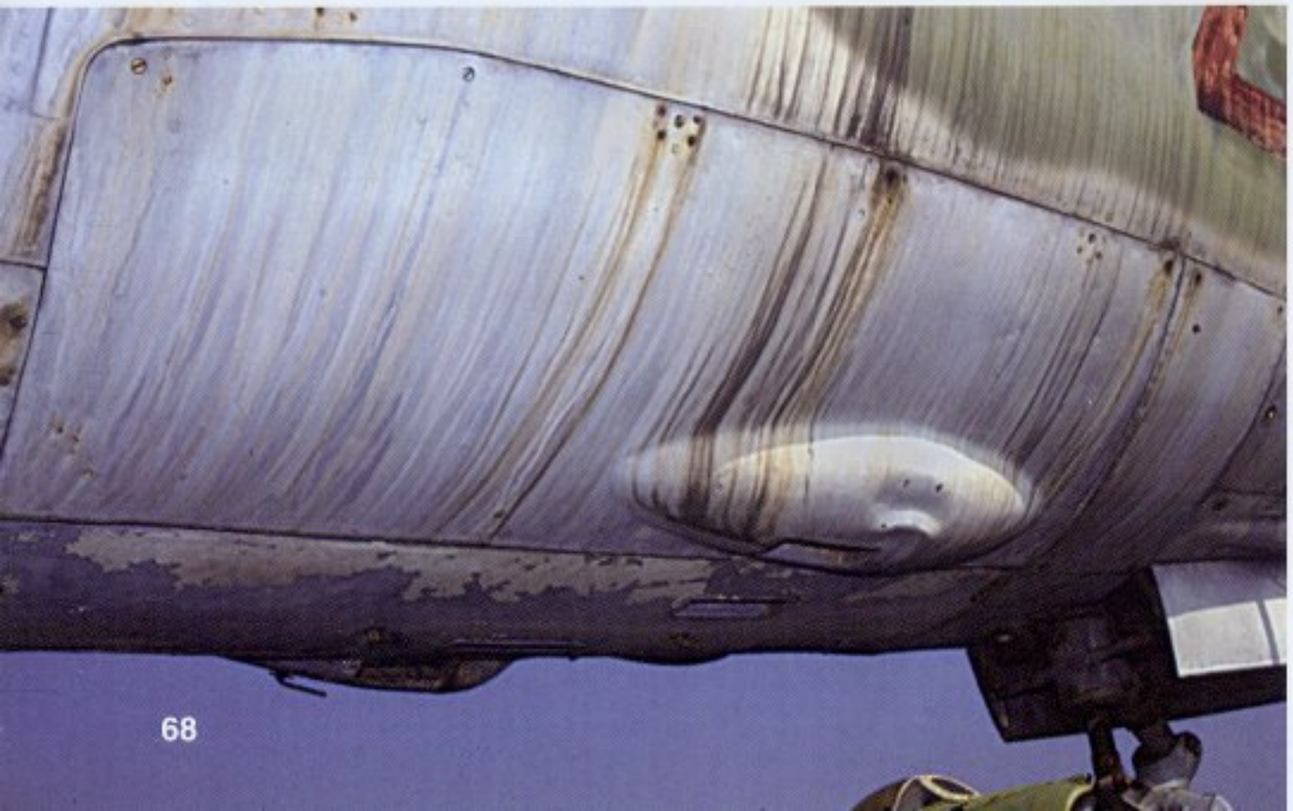
(Below) MiG-17PF "Blue 40" of the VVS. Leaning against the front of the aircraft is the large air intake cover used on most MiG-17PFs. This Fresco-D has a large, one-piece gun blast panel, typical of late production MiG-17PFs. Atypical of late Fresco-Ds is the wire radio antenna cable leading from tail to starboard fuselage. The large fairing on the lower rear fuselage houses a reconnaissance camera.

The cartridge and link ejection ports for the NR-23 cannons of a MiG-17PF viewed from starboard.

The blister fairings covering the cartridge ejection ports of a Bulgarian Air Force MiG-17PF. The blister fairings were teardrop-shaped only on the Fresco-D, a feature that distinguishes it from the MiG-17 Fresco-A and MiG-17F Fresco-C day fighters.

The starboard cartridge ejection port of a MiG-17PF. The large fairing covering the starboard N-37 cannon of the MiG-17F was not necessary on the Fresco-D, which instead had a smaller NR-23 cannon in that position. The panels in the lower nose fuselage section of the Fresco-D were larger than those of the MiG-17F.

Like that of the starboard cartridge ejection port, the blister fairings of the two portside cartridge ejection ports of a MiG-17PF were also teardrop-shaped. The front ejection port of the MiG-17PF had only a single link ejection slot, while the front ejection port of the MiG-17F had two link ejection slots.



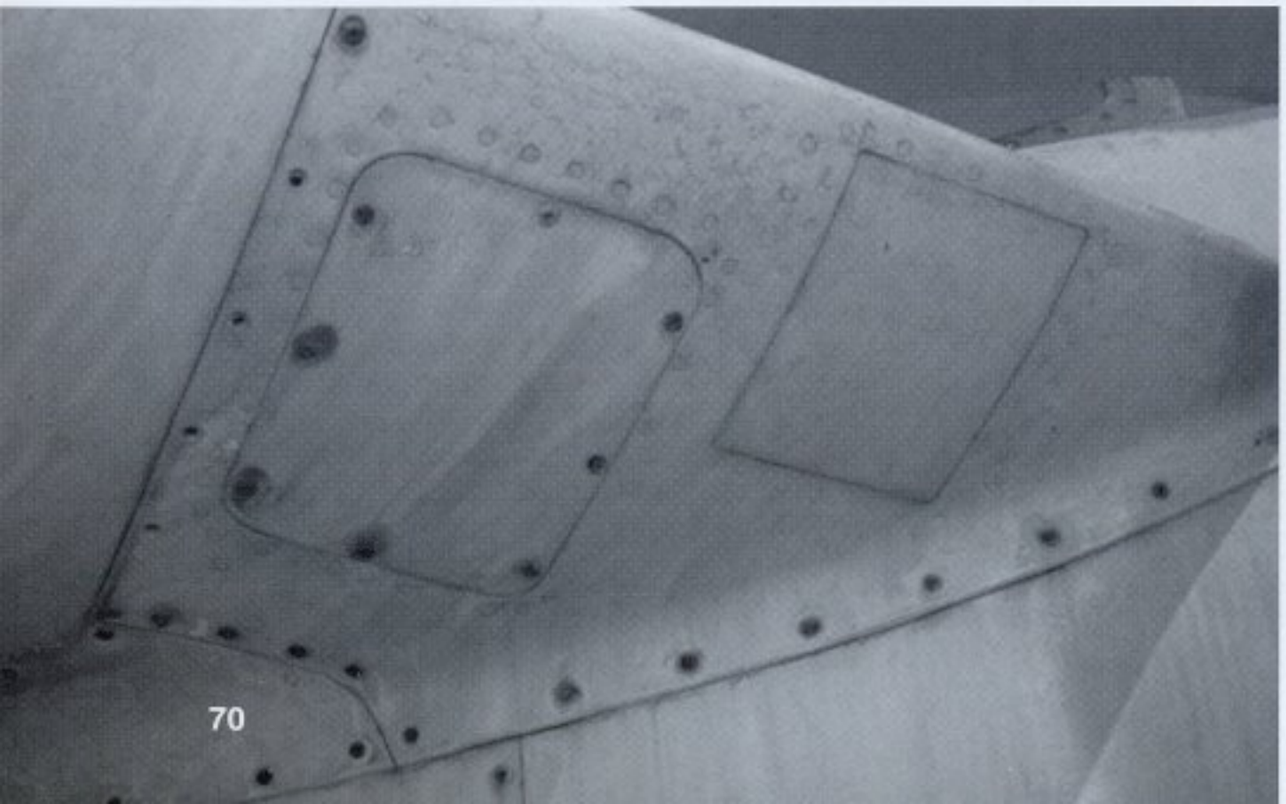
(Above) Unlike the nose wheel doors of the MiG-17F, those of the MiG-17PF had five circular panels on their inner surfaces. The shape of the forward edge of the MiG-17PF's nose wheel doors was also different from that of the Fresco-C.

(Right) The port windshield of a Letectvo Ceskoslovenske Lidove Armady (Czechoslovak Air Force) MiG-17PF. The short red rod protruding from the nose adjacent to the windshield frame is the mechanical position indicator for the nose gear. Due to the greater sweep angle of its windshield, the Fresco-D's indicator was nearer the canopy frame than on the MiG-17F.

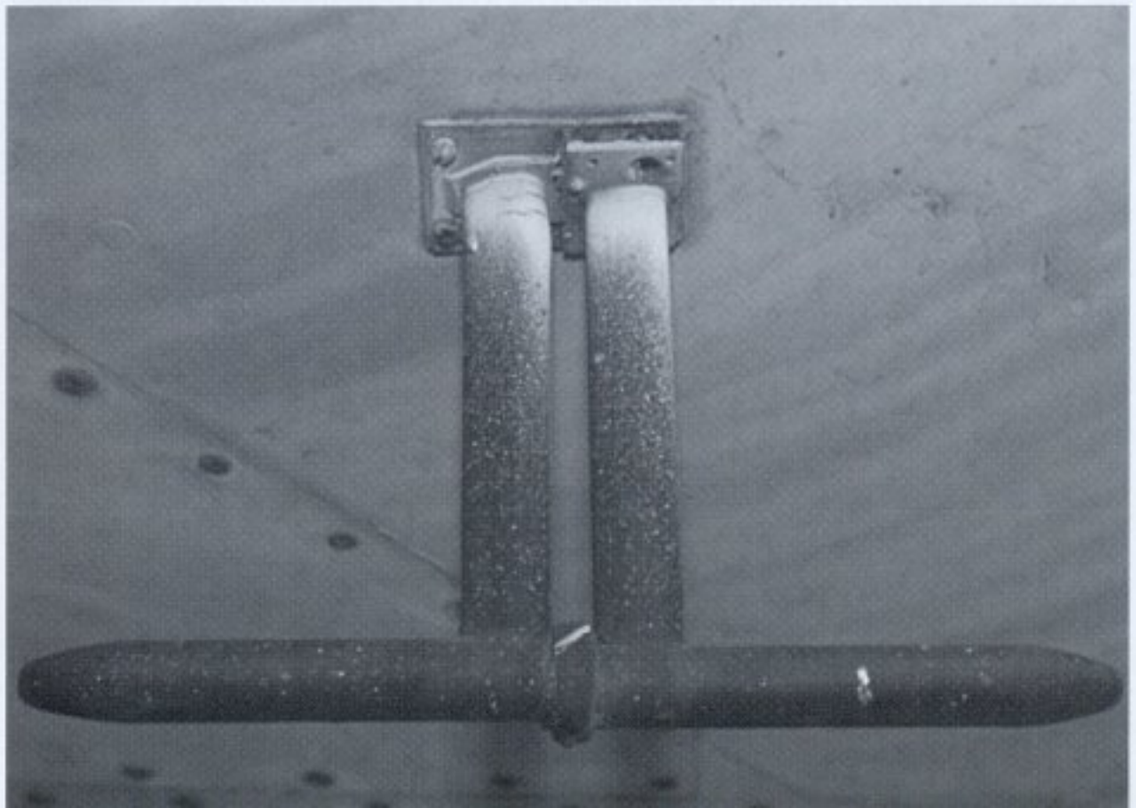
(Below) The canopy of the MiG-17PF was identical to that of the MiG-17F, but the windshield of the MiG-17PF was swept aft more steeply than that of the Fresco-C. The antenna mast of most Fresco-Ds had a rectangular base. However, the base itself is not a distinguishing feature, as there were also a number of Fresco-Ds without it as well as some MiG-17F Fresco-Cs with it.

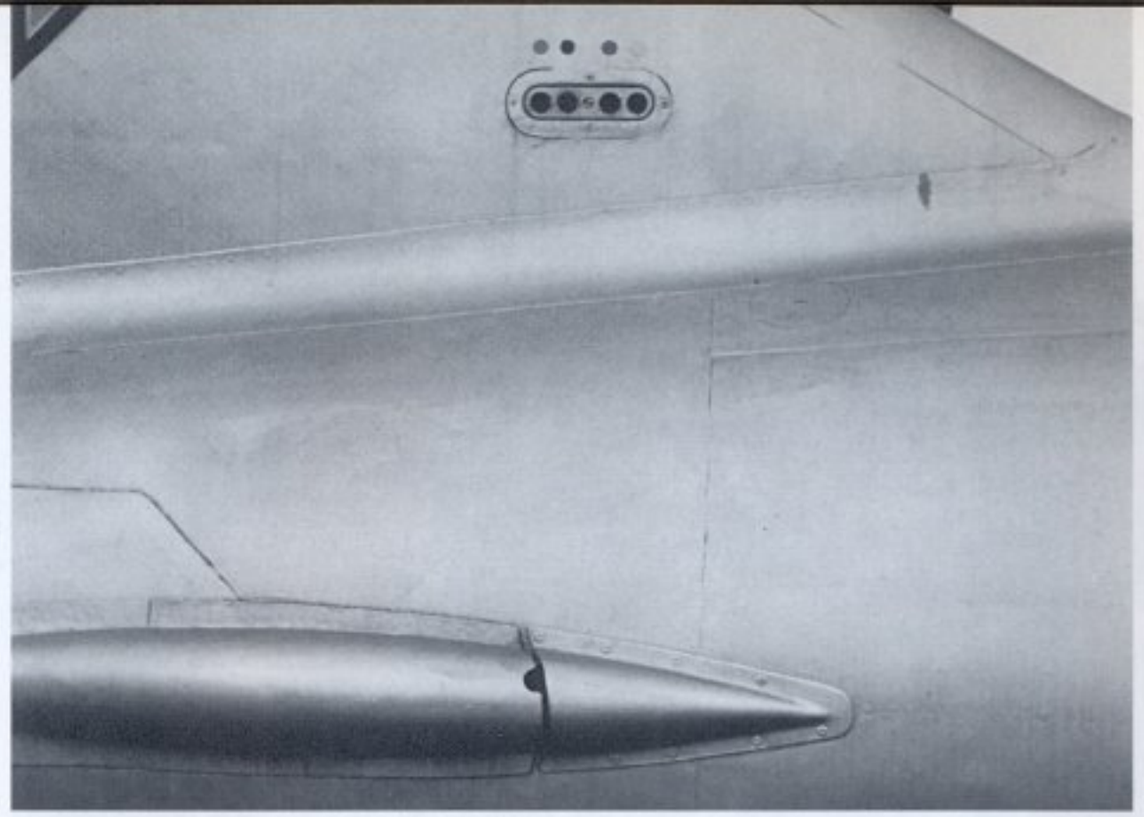
The MiG-17PF differed in a number of details from the MiG-17F. The EKSR-46 signal flare dispenser was relocated forward to the base of the starboard side of the vertical fin. All Fresco-Ds lacked the aft *Syrena*-2 antenna below the tail position light. MiG-17PF "Red 420" (s/n 1D-01-10) was delivered in January 1959 to Jagdfliegergeschwader 7 (7th Fighter Aviation Regiment) "Wilhelm Pieck," which was based at Drewitz near Cottbus. The fighter crashed during a training mission on 12 January 1969.

Distinctive features of the MiG-17PF are two rectangular access panels located on the underside of the starboard wing just aft of the leading edge at the wing root. The MiG-17F had only a single panel in this location, while the Fresco-A and the MiG-15 had no access panel at all in this spot.

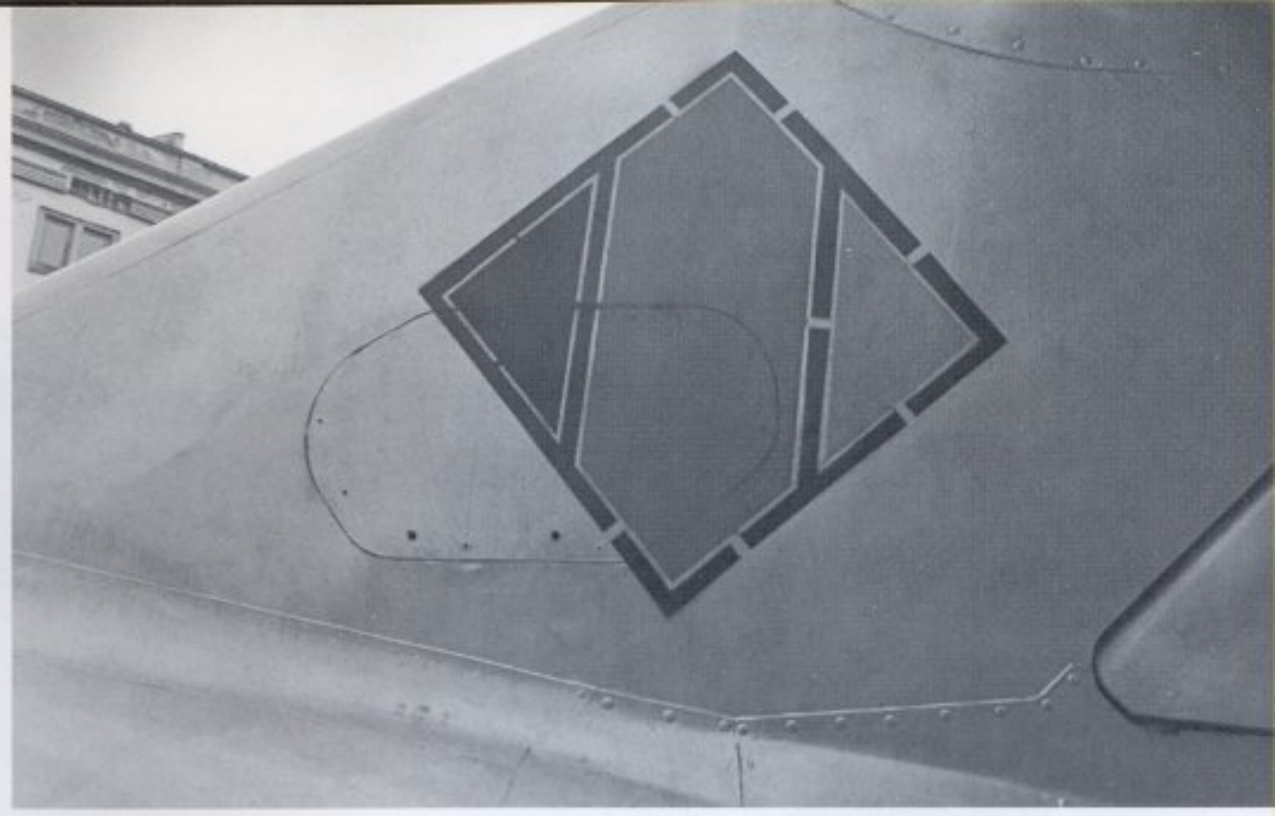


The T-shaped radio antennas of the RV-2 radar altimeter on the MiG-17PF lacked triangular gussets at the corners, unlike the antennas of the MiG-17 and the MiG-17F.



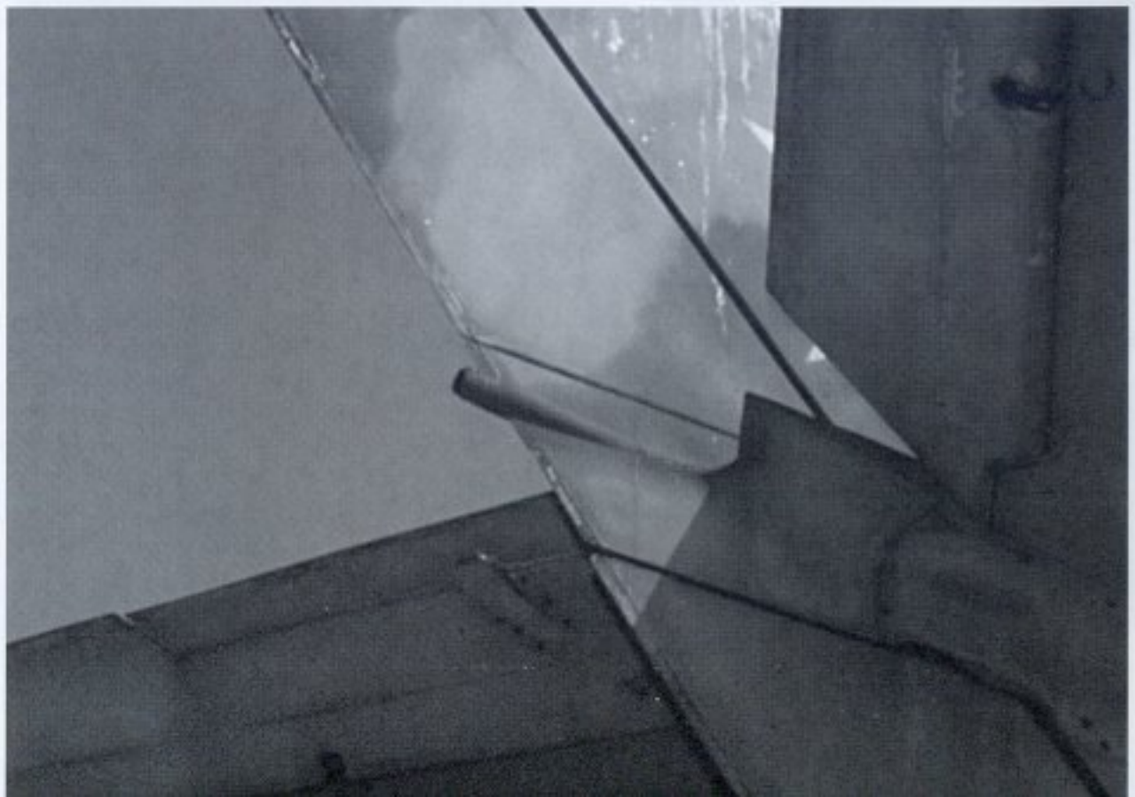


Compared to that of the Fresco-C, the position of the EKSR-46 flare launcher on the MiG-17PF Fresco-D was slightly more forward and lower on the vertical fin. Colored dots above the EKSR-46 denoted the color of the flare to be loaded in each tube. The EKSR-46 was a derivative of the German AZA-10 signal flare launcher installed in the Messerschmitt Me 262 jet fighter.

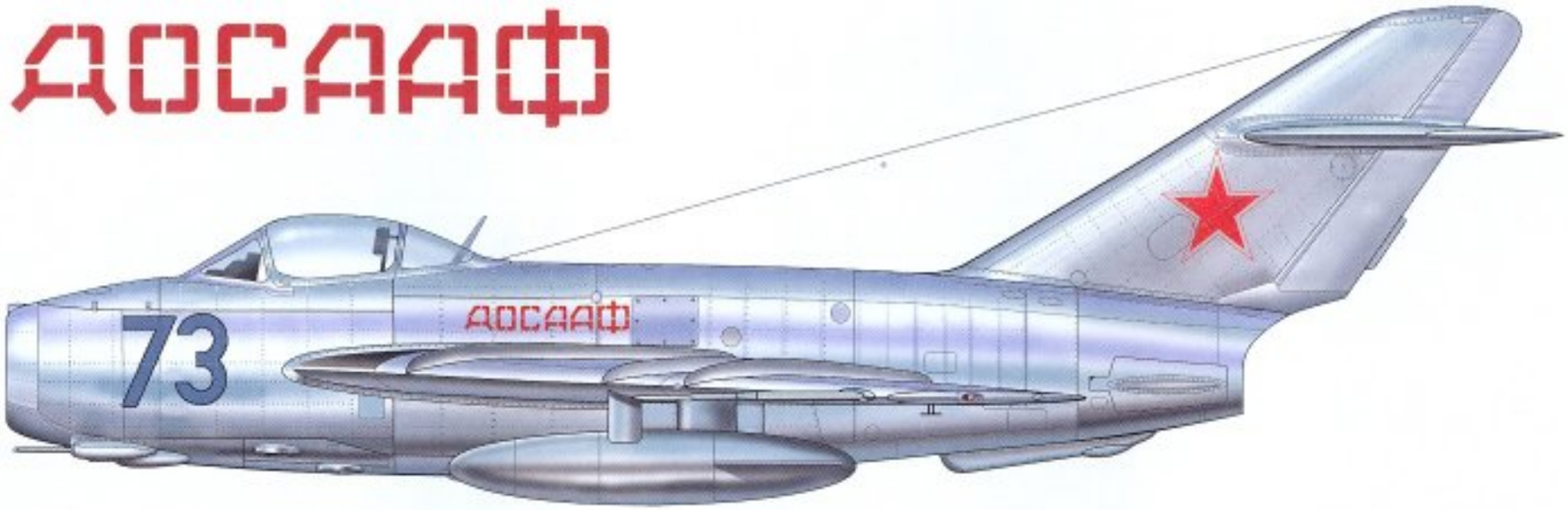


A distinctive feature of the MiG-17PF was the large access panel on the port side of the vertical fin. This panel was considerably smaller on the MiG-17F Fresco-C. The style of East German national marking seen here was used between 1956 and autumn 1959. After the hammer and sickle emblem was added, the national markings were applied as decals. After 1962, they were again spray-painted.

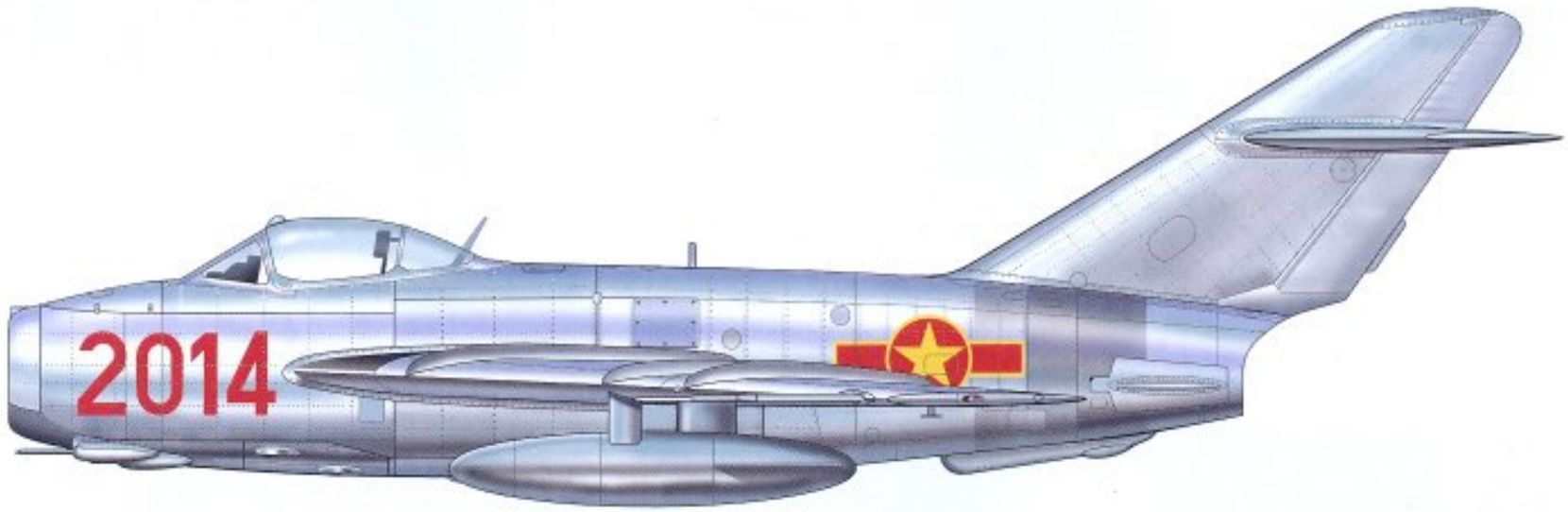
No MiG-17PF was equipped a tail antenna for the *Syrena*-2 radar homing and warning system below the position light, unlike Soviet- and Polish-built MiG-17Fs, all of which had one. However, the lack of the antenna is not a means to distinguish the Fresco-D from the MiG-17 day fighters, as most Fresco-As and all Chinese-produced Shenyang J-5s also lacked this antenna.



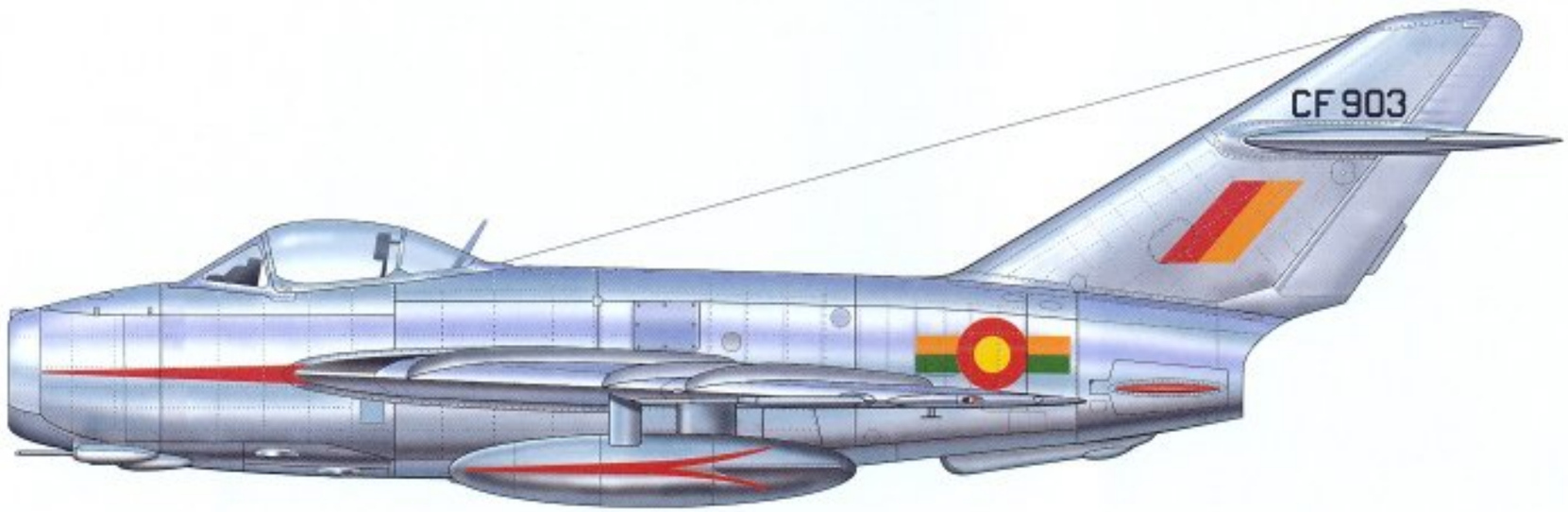
The lower aft fuselage of a Bulgarian MiG-17PF. The circular panel in the center covers the antenna of the ARK-5 radio compass.



"Blue 73," an early production MiG-17 of DOSAAF (*Dobrovol'noe obshchestvo sodeistviia armii, aviatsii i flotu* – the Volunteer Society to Support the Army, Aviation, and the Fleet), a state-sponsored paramilitary group. This Fresco-A has a MiG-15 canopy, as identified by the wide rear canopy frame. The *bort* number "73" has a thin black outline. National insignia is applied to the underside of both wings.



"Red 2014" was one of the first batch of thirty-six Fresco-As supplied to the Vietnamese People's Air Force (Khong Quan Nhan Dan Viet Nam) by the Soviet Union. This particular MiG-17 was assigned to the 921st Fighter Regiment "Sao Do" in late summer 1964.

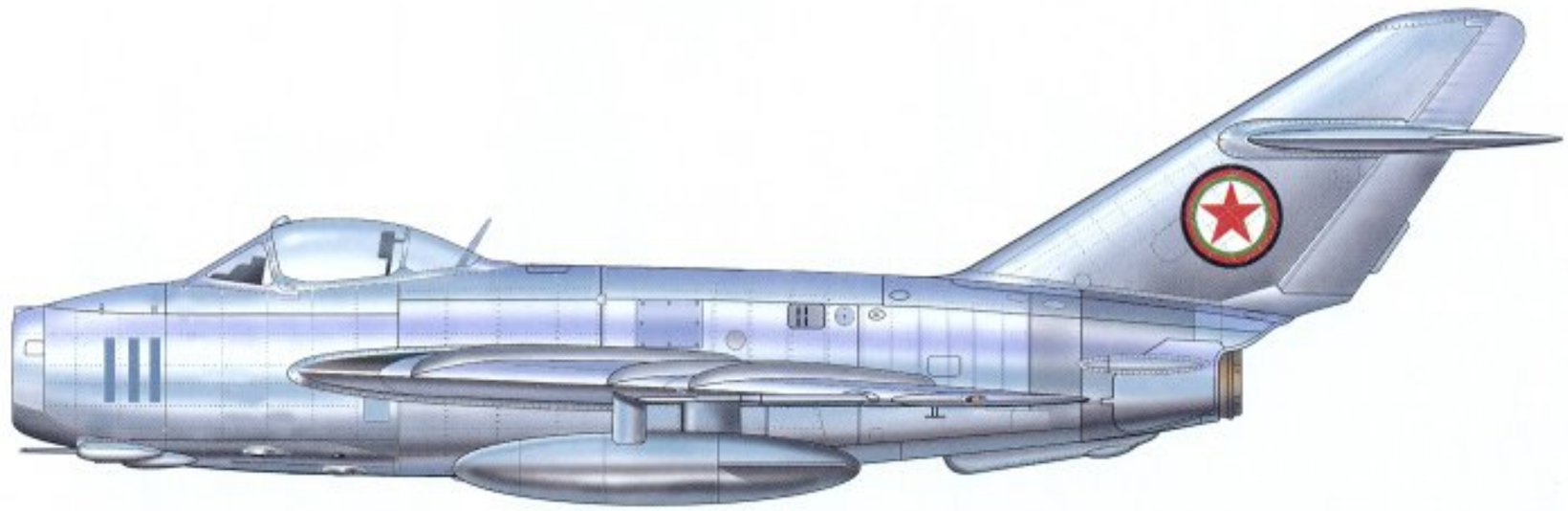


"CF-903," an early MiG-17 Fresco-A of the Sri Lankan Air Force, based at Katunayake Air Force Base. The first five MiG-17s for Sri Lanka arrived from the Soviet Union aboard An-22 transports in April 1971.

"Red 3003," a Shenyang F-5 of the 921st Fighter Regiment "Sao Do," Vietnamese People's Air Force, late 1965. This aircraft formerly belonged to the Chinese People's Liberation Army Air Force, and the Chinese national markings were overpainted with light blue or light gray prior to the application of the VPAF insignia.

"Red 2011," a Shenyang F-5 of the 923rd Fighter Regiment "Yen The," Vietnamese People's Air Force, 1967. The Fresco-C is camouflaged in green with patches of light gray with national markings applied to both upper and lower wing surfaces. The aircraft carries nine red star victory markings, representing the number of victories credited to the aircraft itself. This Fresco-C was flown by Ngo Duc Mai, who shot down several U.S. aircraft, and is preserved today in the VPAF museum.

"Blue 111," a late Fresco-C of the Royal Afghan Air Force, carries the national marking introduced in 1982. The star-in-circle roundel appeared on both sides of the vertical fin and on the underside of both wings. The first MiG-17Fs were delivered to Afghanistan in 1958. A total of fifty were divided among four squadrons, based at Mazar-I-Sharif and Kandahar.



"Blue 73," an early production MiG-17 of the *DOSAAF* (*Dobrovol'noe Obshchestvo Sodeistviia Armii, Aviatsii i Flotu* — Volunteer Society to Support the Army, Aviation, and the Fleet). This Fresco-A has a MiG-15-type canopy and no rear-view mirror and, most unusual for an early MiG-17, has been retrofitted with the button antennas of the *Syrena*-2 system on the wing leading edges and tips.

"Red 29," an early production MiG-17 of the *VVS* (Soviet Air Force), also has a MiG-15-type canopy and no rear-view mirror. The MiG-15 canopy has a wider rear frame than the canopy of the standard production MiG-17. This Fresco-A has the blade antenna for the SRO-1 *Baríy*-M IFF transponder installed behind the nose wheel well on the port side.

"Red 589," a late production East German MiG-17 Fresco-A, has a canopy rear-view mirror and a *Syrena*-2 antenna on the tail immediately below the position light. The button antennas on the wing leading edge were retrofitted in the course of the Fresco's operational service with the Luftstreitkräfte der Nationalen Volksarmee (East German Air Force).

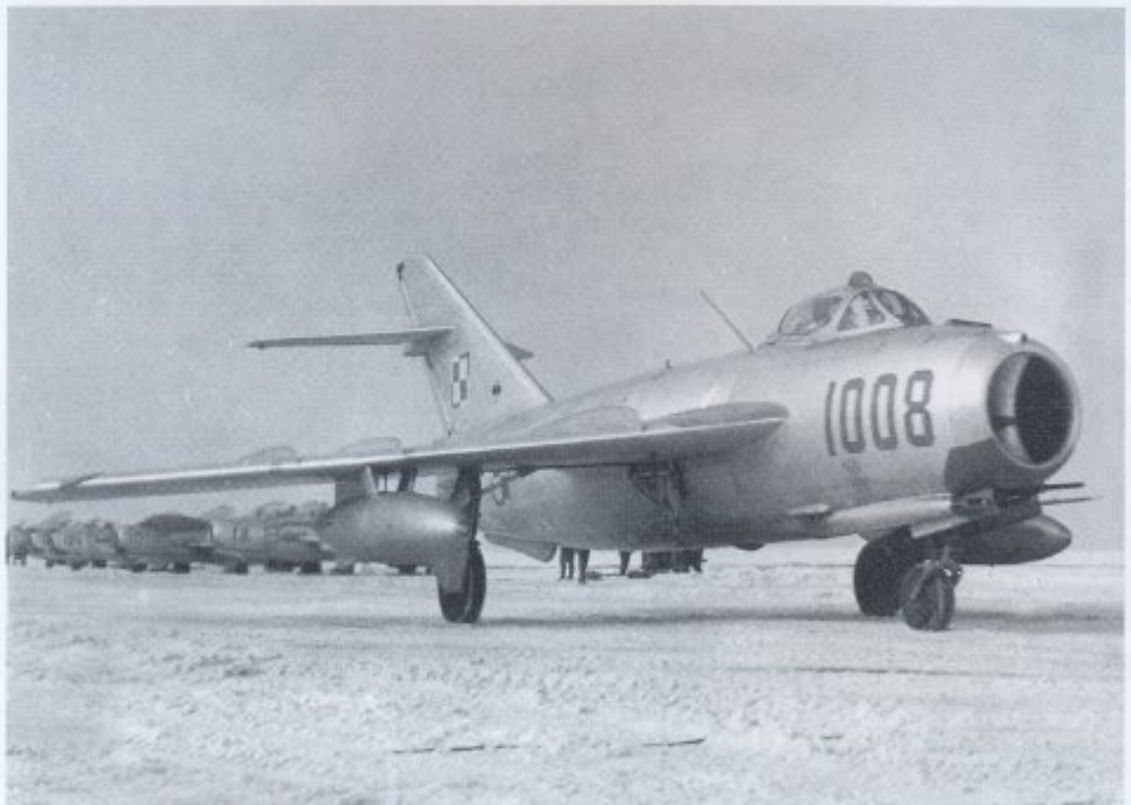
"Blue 20," a MiG-17 Fresco-A of the *VVS*, is unusual in having an SRD-1M radar rangefinder mounted on its radio bay access panel, which is hinged to the nose. Most Fresco-As had no hinged radio bay access panel, and a very few were retrofitted with a rangefinder.

"Blue 111," an Afghan Air Force MiG-17F. The tires have been painted white to help protect them from the effects of the sun. The first MiG-17s were delivered to the Royal Afghan Air Force in 1958. Fifty Fresco-As and Fresco-Cs were divided among four squadrons operating from Mazar-I-Sharif and Kandahar Air Force Bases. This style of Afghan national marking was introduced in 1982.

A factory-fresh Letectvo Ceskoslovenske Lidove Armady (Czechoslovak Air Force) MiG-17F. This is an early Fresco-C without the SRD-1 *Radal* radar rangefinder antenna, but equipped with an SRO-1 *Bariy*-M IFF transponder antenna. All Czechoslovakian MiG-17Fs were imported from the Soviet Union.

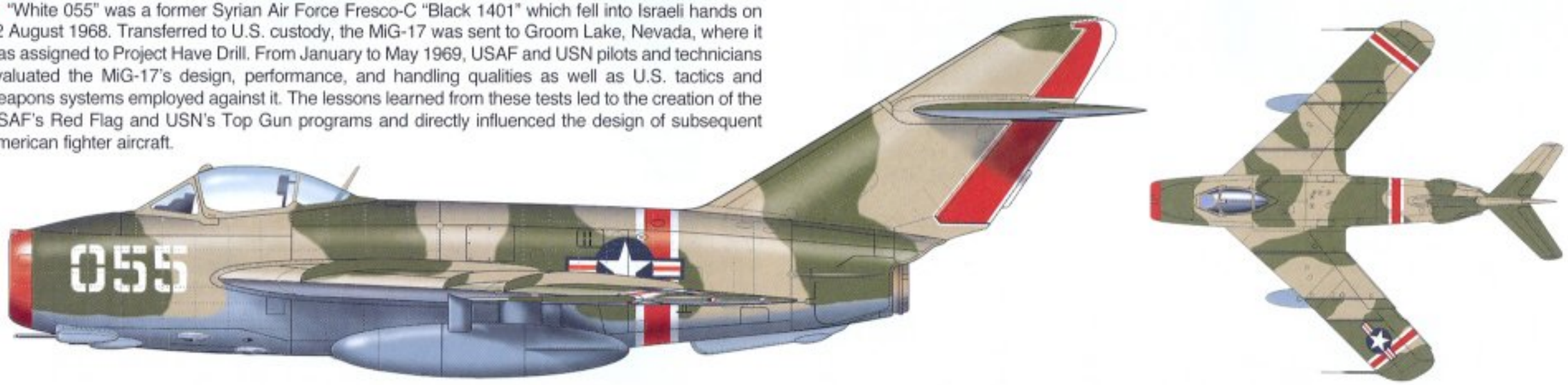
Lim-5 "Red 1008" (s/n 1C-10-08) was accepted by the Polish Air Force on 15 April 1958 and was allocated to the 26. Pulk Lotnictwa Mysliwskiego (26th Fighter Aviation Regiment) at Redzikowo Air Force Base. It is a standard Fresco-C equipped with the SRD-1 *Radal* radar rangefinder antenna on the nose and *Syrena*-2 button antennas on the wing leading edge and wing tip.

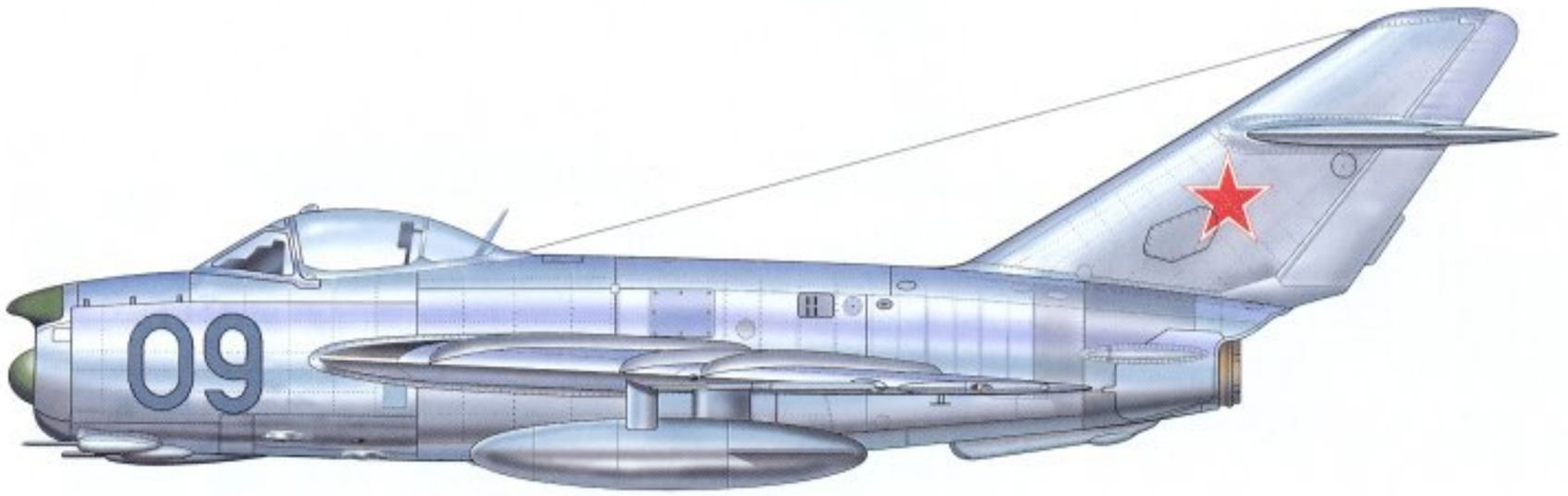
The former "Black EP-01" after it was renumbered "Black 0952" in summer 1957, when the Letectvo Ceskoslovenske Lidove Armady changed its system of tactical numbers. Czechoslovak and East German MiG-17s were unique among those of the Warsaw Pact nations in having the national marking applied on the upper wing surface in addition to the usual locations.



▼ "Black 1103," a Polish-built MiG-17F of 11 Squadron, Indonesian Air Force.

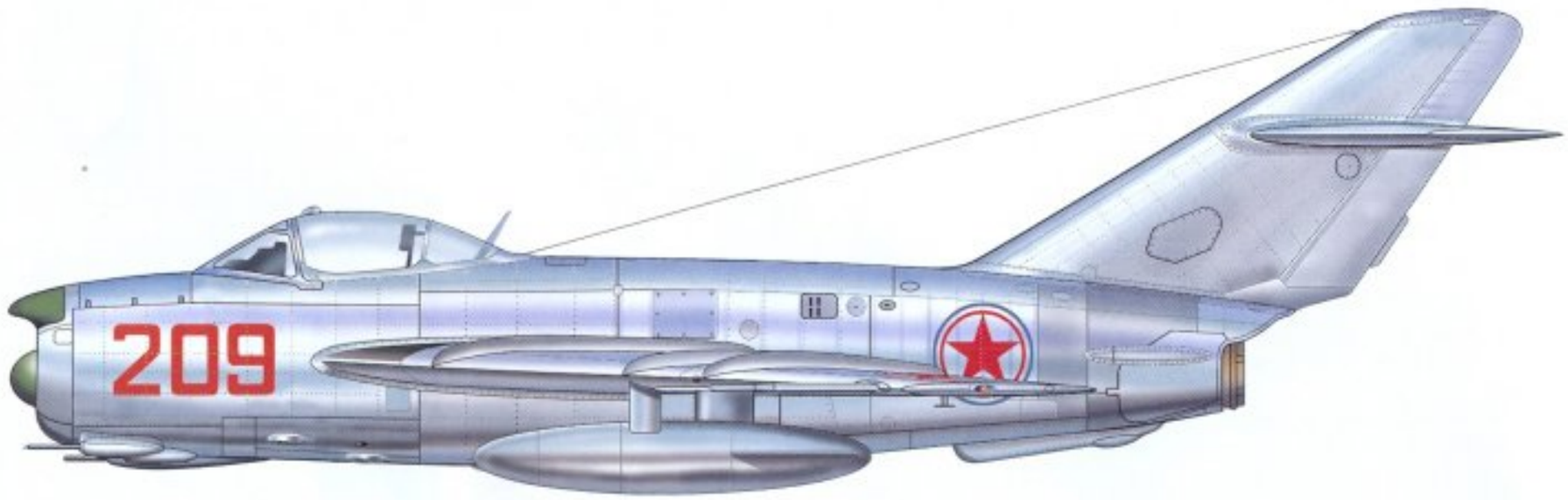
▼ "White 055" was a former Syrian Air Force Fresco-C "Black 1401" which fell into Israeli hands on 12 August 1968. Transferred to U.S. custody, the MiG-17 was sent to Groom Lake, Nevada, where it was assigned to Project Have Drill. From January to May 1969, USAF and USN pilots and technicians evaluated the MiG-17's design, performance, and handling qualities as well as U.S. tactics and weapons systems employed against it. The lessons learned from these tests led to the creation of the USAF's Red Flag and USN's Top Gun programs and directly influenced the design of subsequent American fighter aircraft.



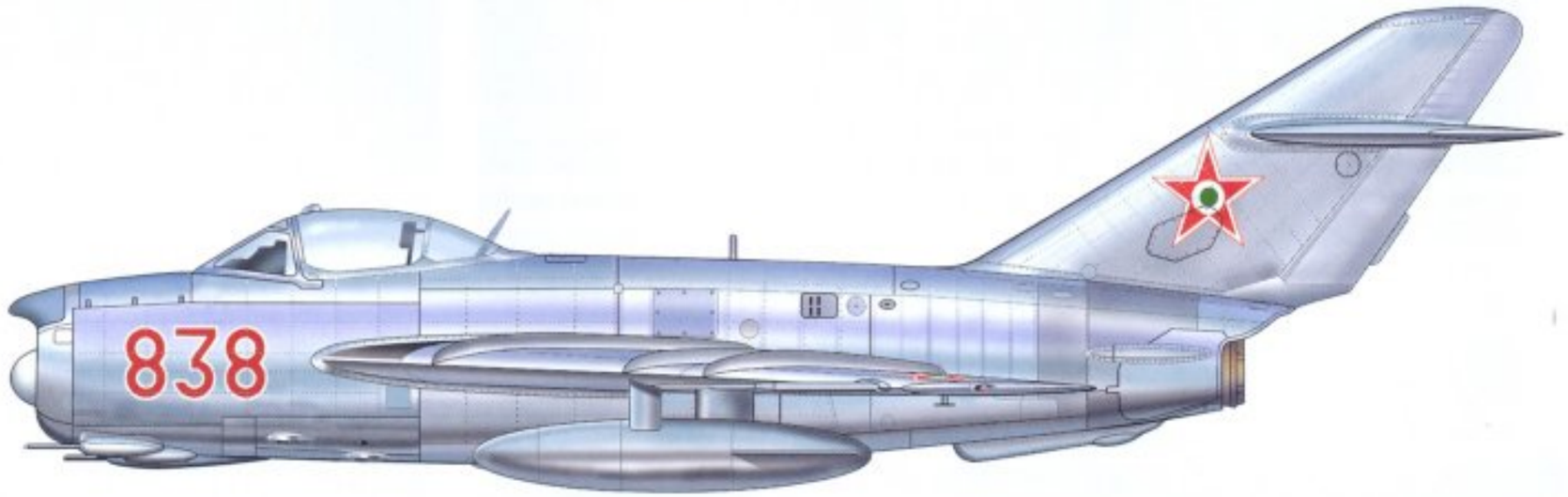


◀ "Blue 09," a MiG-17PF Fresco-D of a Fighter Aviation Regiment of *PVO Strany* (*Protivo-Vozdushnaya Oborona Strany*, or "anti-air defense of the country"), the air defense branch of the Soviet military. The Soviet national insignia appears on both sides of the vertical fin and the underside of both wings. Unlike Western air defense forces, *PVO Strany* was a branch of the military unto itself, separate from the Soviet Air Force (*VVS*). Its principal mission was to intercept U.S. Strategic Air Command bombers as they penetrated Soviet airspace. It had its own chain of command, schools, radars, and sound director sites.

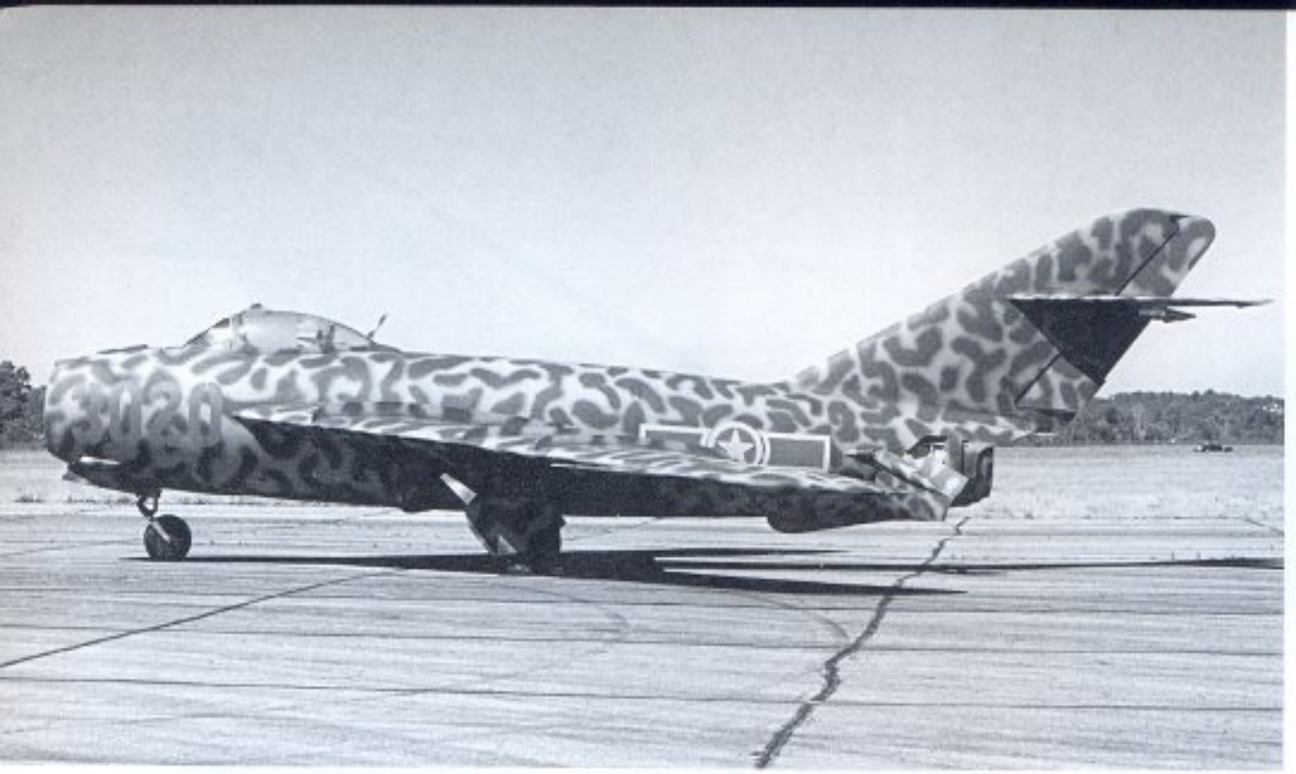
"Red 209," a North Korean MiG-17PF. North Korea received its first Fresco-Ds in 1958, and some remained in service as late as the 1990s. The national insignia appeared on both sides of the aft fuselage and under both wings.



"Red 838," a MiG-17PF Fresco-D of the 50. Honi Vadaszrepülö Ezred (50th Home Defence Interceptor Regiment), Hungarian Air Force, Taszar Air Force Base. National insignia appeared on upper and lower surfaces of both wings as well as both sides of the vertical fin. The tactical number had a thin white outline.



"Red 619," one of the last active Polish Lim-6bis aircraft, in its final color scheme of dark green, medium green, and brown, with dark blue undersurfaces and thin yellow border around the tactical number. Its tail section has been removed for maintenance of the VK-1F engine. Due to a lack of consistent standards and paint of poor quality, Polish Lim-6s appeared in a variety of color schemes which weathered and chipped easily.

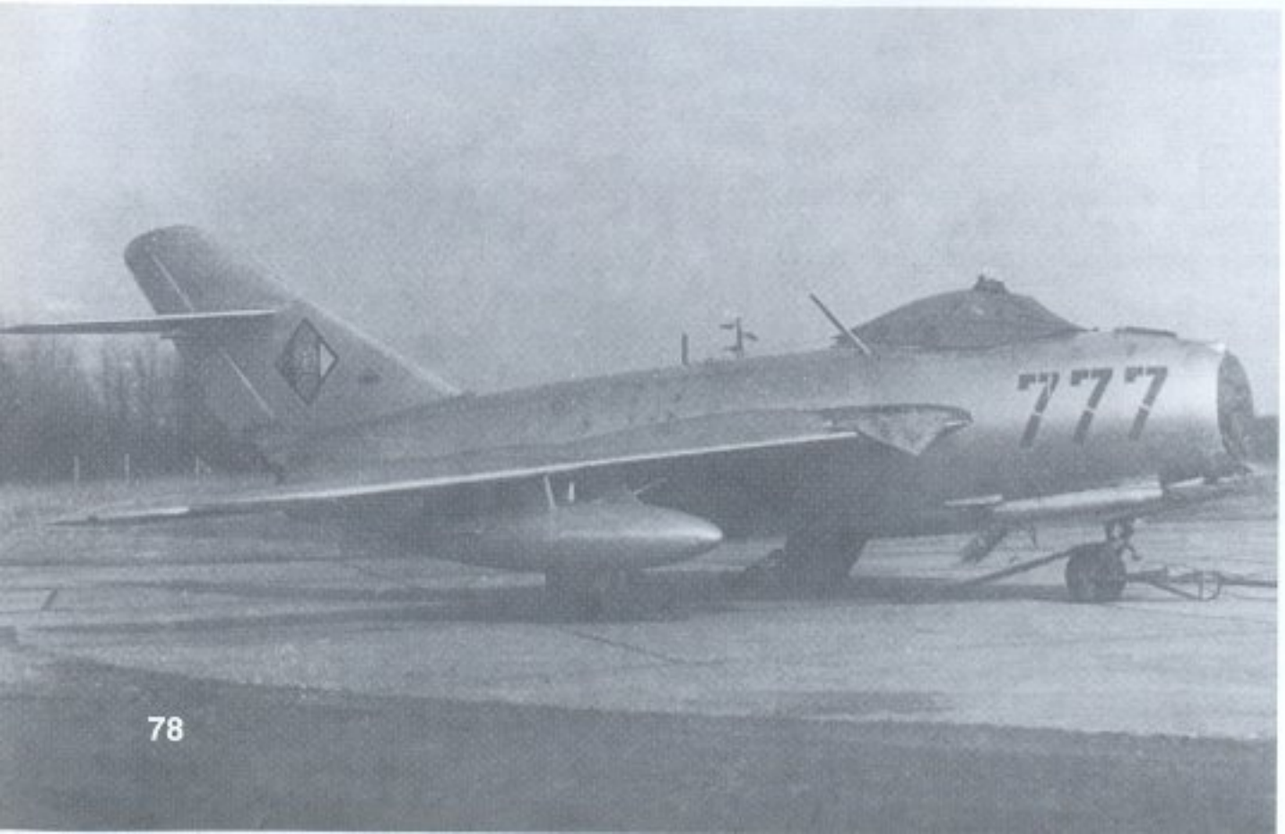


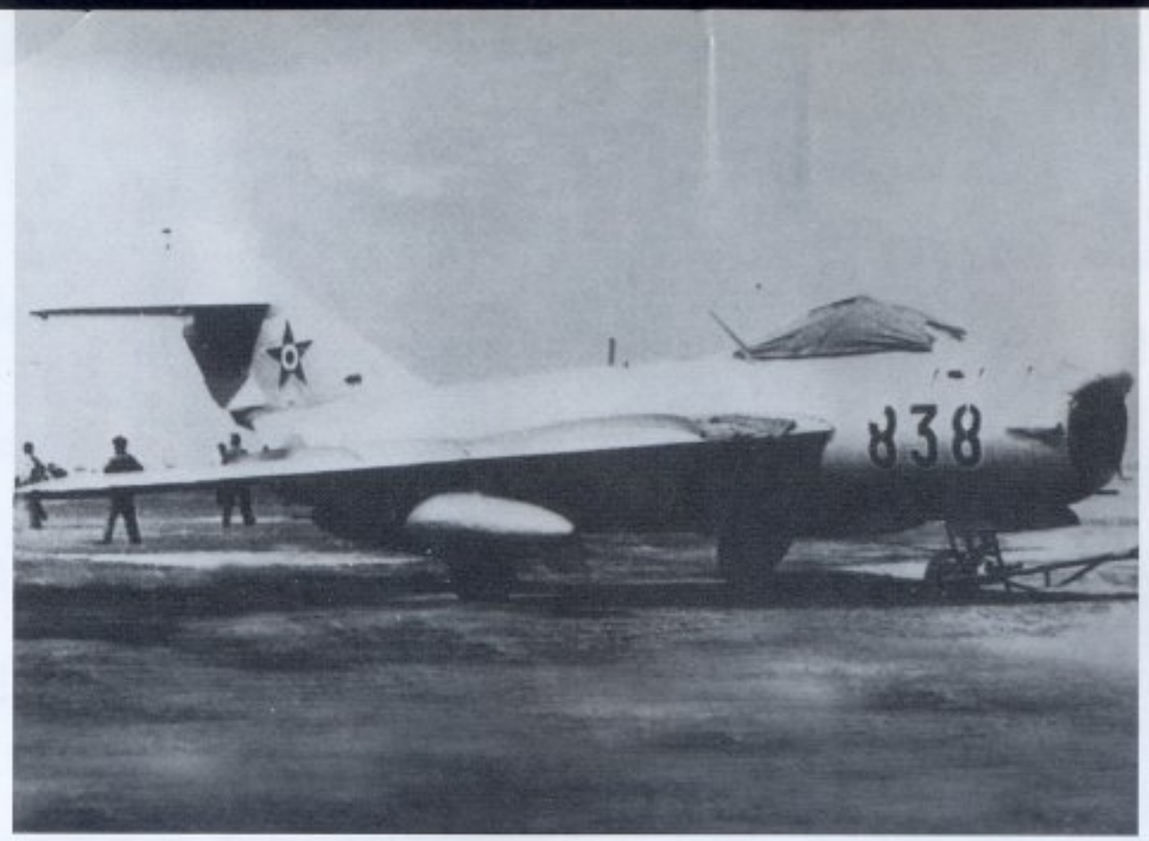
A MiG-17F Fresco-C on display at the National Museum of the USAF, Dayton, Ohio. Although painted in the markings of the North Vietnamese Air Force, the aircraft was presented to the museum by the Egyptian Air Force in 1986 as a symbol of friendship and cooperation between the two nations.

"Black 1024," A Soviet-built MiG-17F of the Cambodian Air Force, on 18 December 1970 at Phu Cat Air Base in South Vietnam, where the USAF briefly evaluated this particular Fresco-C. The SRD-1 *Radal* radar rangefinder antenna on the nose clearly identifies this as a Soviet-built MiG-17. Chinese-manufactured J-5s lacked this item. The Fresco-C also is equipped with the dorsal antenna for the SRO-1 *Bariy*-M IFF transponder. On 22 January 1971, this aircraft was destroyed with plastic explosives by Vietcong sappers at Phnom Penh Airport, Cambodia.

East German MiG-17F "Red 777" (s/n 1C-08-25) was in service with Jagdfliegergeschwader 2 (2nd Fighter Aviation Regiment) "Juri Gagarin" of the East German Air Force and was based at Trollenhagen near Neubrandenburg. At that time, the Fresco-C was equipped with a dorsal antenna for the SRO-1 *Bariy*-M IFF transponder, but had no *Syrena*-2 button antennas installed.

"Red 777" after its conversion to fighter-bomber by the Flugzeugwerke (Aircraft Factory) at Dresden in the mid-1970s. A MARS-2 pylon has been installed on each wing. The antenna for the SRO-1 *Bariy*-M IFF transponder has been deleted, and *Syrena*-2 button antennas have been installed on the wing's leading edge.





"Red 838," an early production MiG-17PF (s/n 582 10 838), of the 50. Honi Vadaszrepülö Ezred (50th Home Defence Interceptor Regiment) of the Hungarian Air Force. Part of the tactical number has peeled off. There are no *Syrena*-2 antennas on the wing, but a dorsal blade antenna for the SRO-1 *Barly*-M IFF transponder has been installed. Both features were very unusual for a Fresco-D.

MiG-17PF "Red 949" (s/n 0949) was one of only twelve Soviet-built Fresco-Ds in service with the Polskie Wojsko Lotnicze (Polish Air Force). It was allocated to the 21. Samodzielna Eskadra Lotnictwa Mysliwskiego (21st Independent Fighter Aviation Squadron) on 13 May 1955. The small radome in the air intake splitter indicates the Fresco-D is equipped with the RP-1 *Izumrud*-1 radar.

A canvas cover protects the radome of this Lim-5P Fresco-D of the Polskie Wojsko Lotnicze. No national markings were applied to the upper surfaces of the wing.

"Red 15," a MiG-17PF Fresco-D of the Bulgarski Voyenno Vozdushni Sili (Bulgarian Air Force), undergoes maintenance. The cannon platform has been lowered. Bulgarian MiG-17PFs carried national markings on the aft fuselage and the tip of the vertical fin.

Still serving! Once a veteran combat aircraft, the MiG-17 Fresco has become a veteran of the American airshow circuit and a popular attraction due to its comparative rarity and its impressive performance. Often featured is "Red 309" (N406DM), seen here piloted by its owner, William Ward. A Chinese-manufactured Shenyang J-5 Fresco-C, it was built in 1957 and came to the United States in 1988. In order to reduce his speed to match that of the camera plane, Ward has fully extended the J-5's air brakes.

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